



WIRING DIAGRAMS PARTS LISTING

FOR
SERIES

HA

AUTOMATIC DEMAND CONTROLS

FOR ONAN
SERVICE ORGANIZATION
USE ONLY
(Factory...Distributor...Dealer)

ONAN

1400 25TH AVENUE N.E. • MINNEAPOLIS, MINNESOTA 55432
A DIVISION OF INgersoll Rand Corporation

WIRING DIAGRAMS/PARTS LISTING FOR HA AUTOMATIC DEMAND CONTROLS

All of the wiring diagrams apply to HA automatic demand controls and should be used for service and parts information. Before looking up any diagrams, read the description and explanations below.

HA controls use a decimal system model designation previously not used. As an example, the designation 7.5HA was formerly 705HA and 15.0HA was formerly 15HA. Because Spec B controls had both designations, use the decimal system when looking up the wiring diagrams for the 7.5 and 15 KW controls. Therefore, to find the wiring diagram for a Spec B 705HA-21 control, use the Spec B 7.5HA-21 model designation.

NOTE: The decimal system applies to all of the Spec C controls but to none of the Spec A controls.

When using the wiring diagrams, remember all components are shown in their de-energized position unless otherwise noted. To find the diagram in question, proceed to the index page shown below corresponding with the control's specification letter (last letter of model designation as shown on control nameplate).

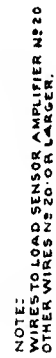
Control Specification Letter	See Index Page
A	2
B	34
C	60

NOTE: For service and maintenance information of HA controls, see service bulletin "Control 13".

**INDEX
FOR
SPEC A CONTROLS**

Find the appropriate model and proceed to the indicated page for the wiring diagram.

WATT RATING	MODEL	WIRING DIAGRAM	PAGE
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617C82

H	WIRE CORR. CORRECTED	JV	625-66
G	ADDED CRG	JV	2-7-66
F	WAS NO. 5047A5	JV	2-7-66
E	WAS NO. 303A33	JV	2-7-66
D	MOVED FROM SUB	JV	2-7-66
C	MOVED FROM SUB	JV	2-7-66
B	WAS N8 332A707	JV	6-24-65
A	WAS N8 332A707	JV	6-24-65
	WAS 80K A520 J01B1546	JV	6-24-65
1ST	REVISION	CH	DATE

Origin DIVISION OF ELECTRONIC CORPORATION

DATE	WJ B	DATE
5-5-65	WJ B	JV, WJ B
AUTOMATIC DEMAND		
CONTROL WIRING DIAGRAM		
617 C82		
PAGE NO		

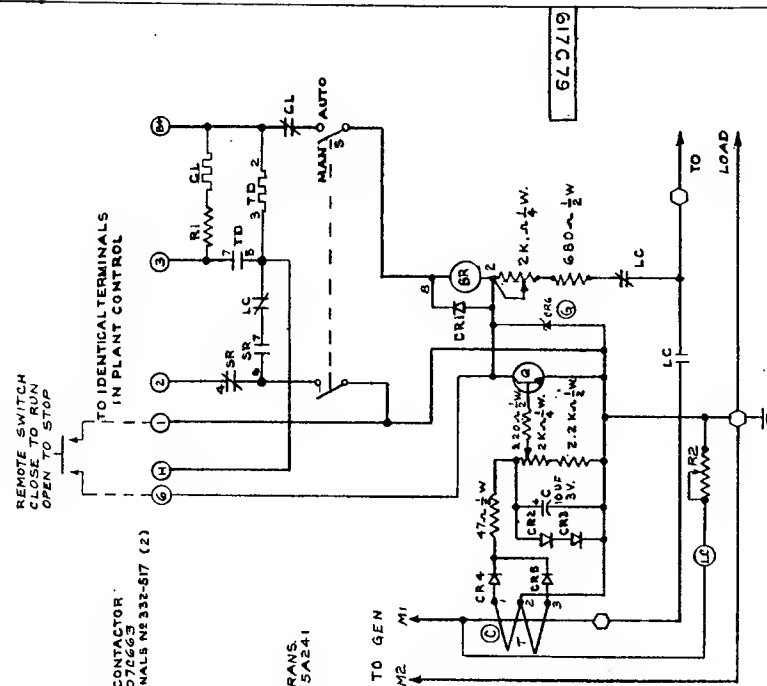
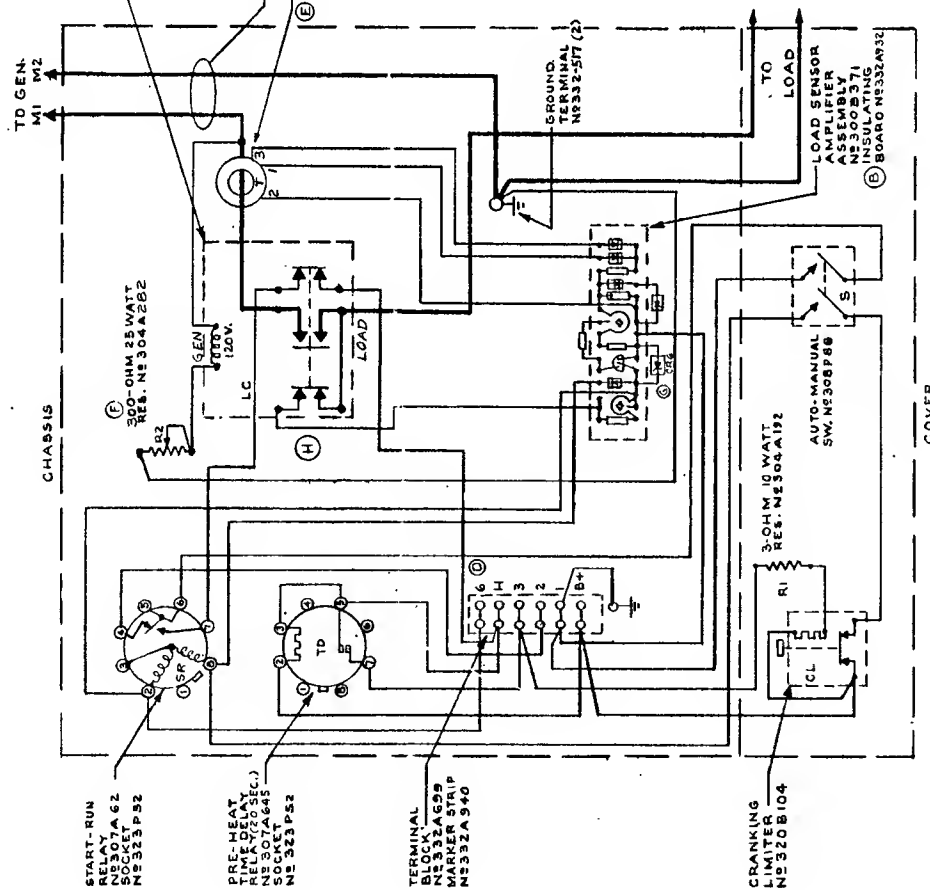
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MODEL	57-5-65 TM M.J.B	DATE	JY, WJ, B
305 HA-21/A	100% AUTOMATIC DEMAND		
120 VOLT 1PH.	CONTROL WIRING DIAGRAM		
2 WIRE 50-60W	ENCL NO		
12 V. CRANKING	617 C82		

617C79

PICTORIAL

SCHEMATIC

305HA-21/10A



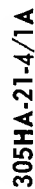
305HA-21/10A

NOTE:
WIRES TO LOAD SENSOR AMPLIFIER N320
OTHER WIRE N320 OR LARGER.

H	WIRE CONN. CHANGED	27	6-25-66
G	ADDED CRG	21	4-7-66
F	REMOVED CRG	20	1-1-66
E	ADDED CRG	19	1-1-66
D	ADDED CRG	18	1-1-66
C	MOVED CRG FROM GEN SIDE	17	1-1-66
B	MOVED CRG FROM GEN SIDE	16	1-1-66
A	WAS BOX ASSY 301B1388	15	1-1-66
1	REVISION	14	1-1-66
2	REVISION	13	1-1-66
3	REVISION	12	1-1-66
4	REVISION	11	1-1-66
5	REVISION	10	1-1-66
6	REVISION	9	1-1-66
7	REVISION	8	1-1-66
8	REVISION	7	1-1-66
9	REVISION	6	1-1-66
10	REVISION	5	1-1-66
11	REVISION	4	1-1-66
12	REVISION	3	1-1-66
13	REVISION	2	1-1-66
14	REVISION	1	1-1-66

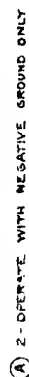
ORIGIN
DIVISION OF INDIANAPOLIS CORPORATION

MODEL	305HA-21/10A
NAME	305HA-21/10A
CONTROL WIRING DIAGRAM	CONTROL WIRING DIAGRAM
120VOLT 1PH	120VOLT 1PH
12V CRANKING	12V CRANKING
617 C79	617 C79



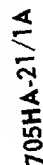
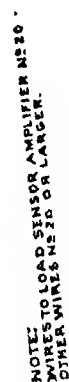
A 2- OPERATE WITH NEGATIVE GROUND ONLY

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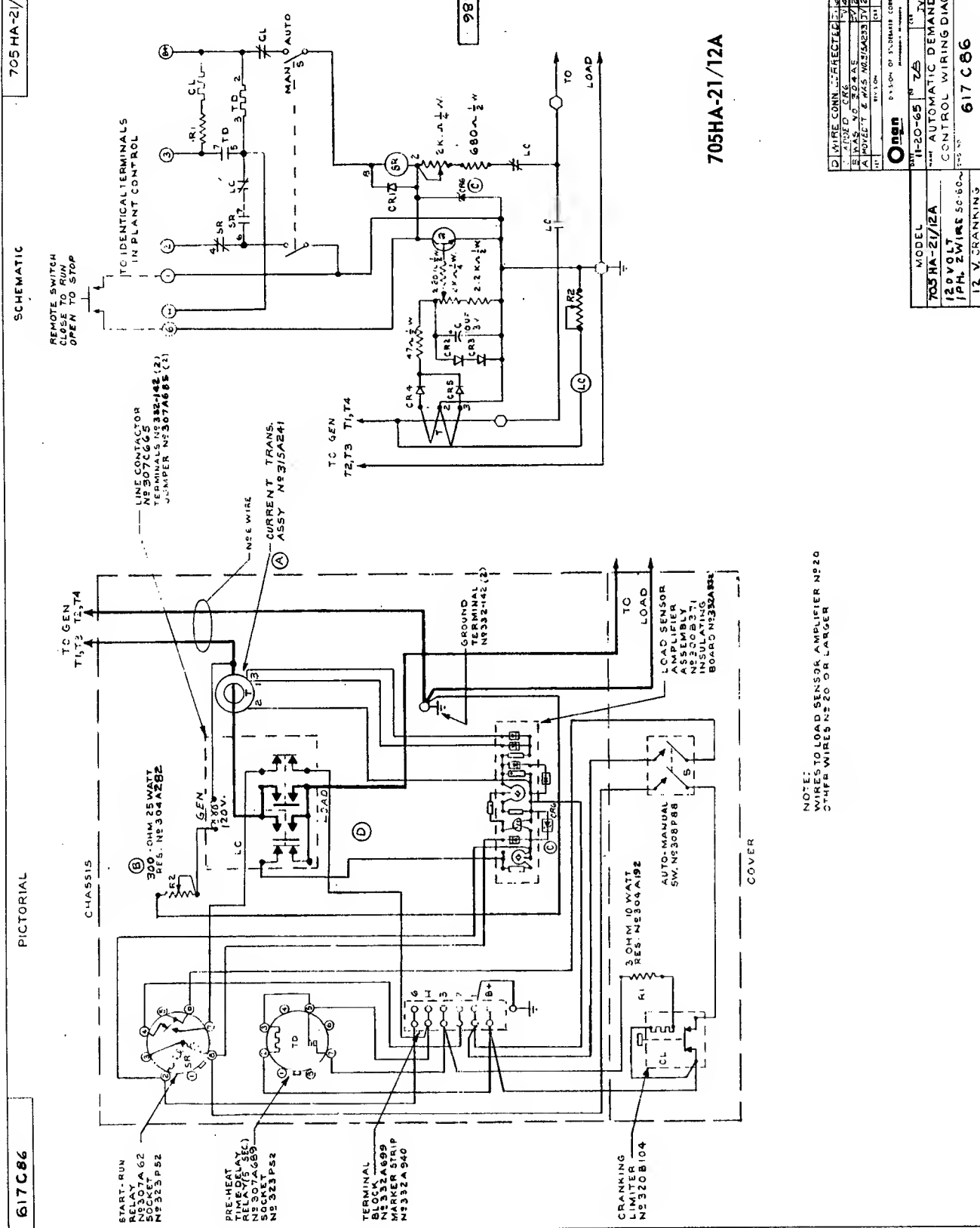
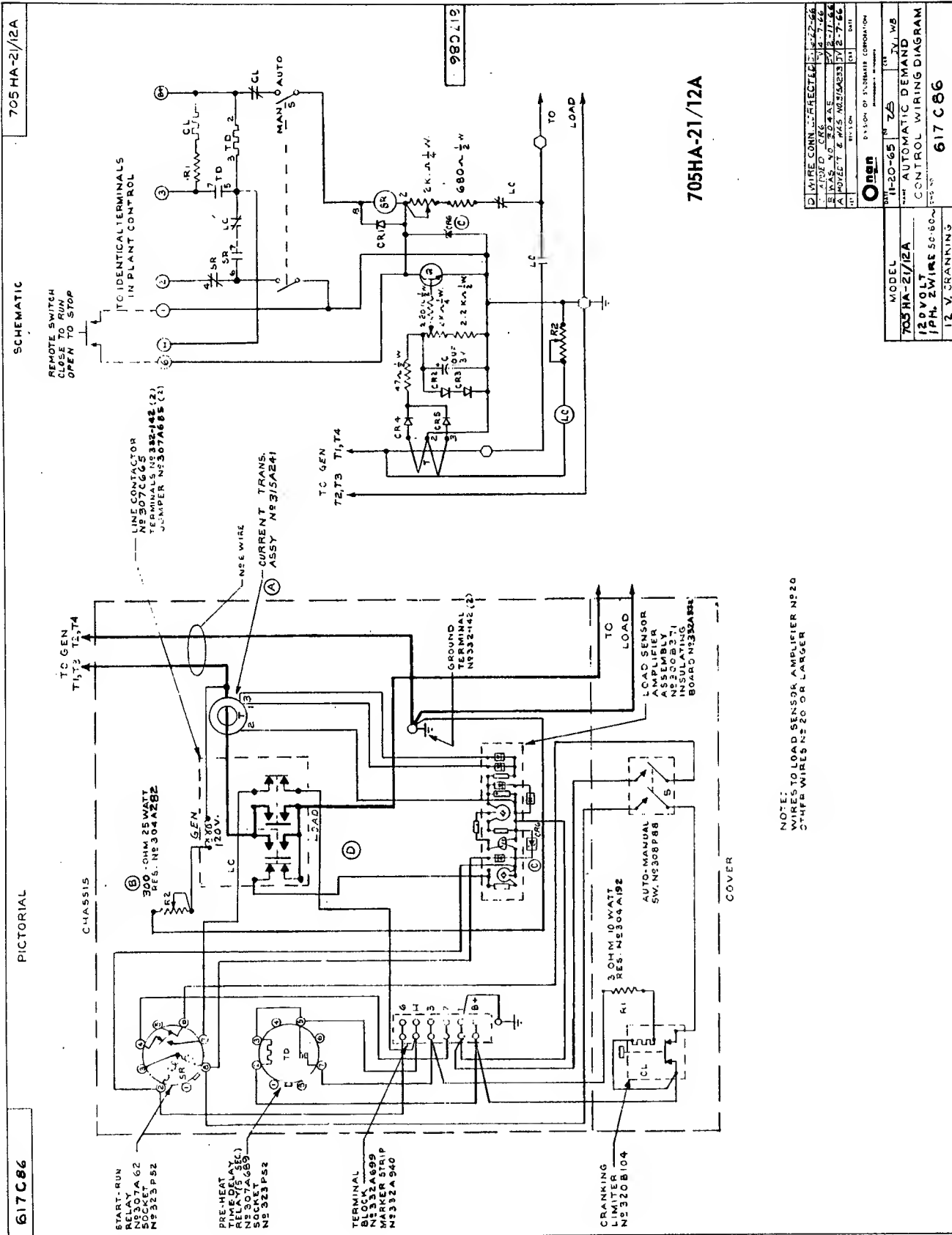


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PICTORIAL



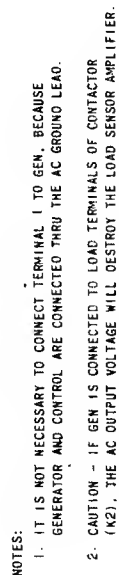
705HA-21/1A	120 VOLT 1PH, 2 WIRE SD-CO	NAME	AUTOMATIC DEMAND CONTROL WIRING DIAGRAM
12 V CRANKING		DATE REC	617 C78



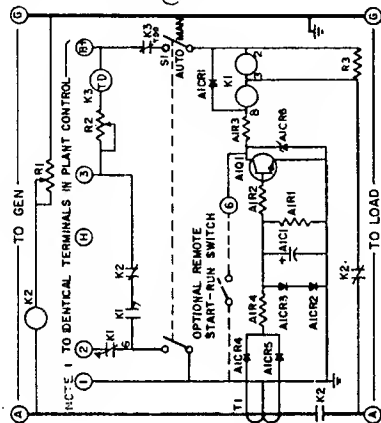
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97	TO CRANKING LIMITER	98	TO CRANKING LIMITER
99	TO CRANKING LIMITER	100	TO CRANKING LIMITER

MODEL	DATE	BY	CHK
705HA-21/12A	11-20-65	75	75
120VOLT			
1PH. 2 WIRE SC-80			
12 V. CRANKING			
617 C86			

FRONT VIEW OF CHASSIS



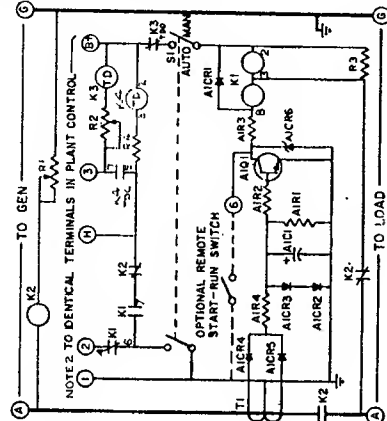
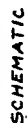
1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.



REF DES	PART NO.	QTY	PARTS LIST
AI	300B482	1	AMPLIFIER ASSY-LOAD SENSOR
	302A932	1	BOARD-INSULATING
KI	307A966	1	RELAY-START RUN
	307A966	1	SOCKET
K2	307CL380	1	CONTACTOR
	332-142	2	TERMINAL
	307AG55	2	JOINER
K3	320B104	1	RELAY-CRANKING LIMITER
RI	304A262	1	RESISTOR, 300-OHM, 25W
RP	304A66	1	RESISTOR, 10-OHM, 50 W
SI	308P88	1	SWITCH-AUTO MANUAL
TI	315A241	1	TRANS. ASSY- CURRENT
TBI	332A699	1	BLOCK- TERMINAL
	98A1927	1	SILK SCREEN
TB2	332-142	2	TERMINAL - GROUND
R3	304A231	1	RESISTOR, 10-OHM, 15 W
	98A2045	1	CAUTION LABEL
	301D2573	1	CONTROL BOX
	98C1815	1	SILK SCREEN
	98A1957	1	SILK SCREEN
	301B2584	1	TRIM
	51B2237	3	FASTENER- TRIM
	815-178	1	SCREW-HEX HD #8-32X 1/16
	850-30	1	LOCKWASHER #10
	99A966	1	NAMEPLATE-CONTROL
	334A1890	25 FT	WIRE-FLEXIBLE NO. 20 AWG
	334A1842	2 FT	WIRE-FLEXIBLE NO. 16 AWG
			8010219

705HA-21-3/1A

F	ADDED WIRE NO. 341-842	1/10/55	1-1-55
E	334-129C-71A	3-18-55	
D	WAS REED-129C-71A	4-1-55	
C	WAS REED-129C-71A	4-1-55	
B	WAS REED-129C-71A	4-1-55	
A	WAS REED-129C-71A	4-1-55	
121	WAS REED-129C-71A	4-1-55	
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124	WAS REED-129C-71A	4-1-55	
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126	WAS REED-129C-71A	4-1-55	
127	WAS REED-129C-71A	4-1-55	
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129	WAS REED-129C-71A	4-1-55	
130	WAS REED-129C-71A	4-1-55	
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140	WAS REED-129C-71A	4-1-55	
141	WAS REED-129C-71A	4-1-55	
142	WAS REED-129C-71A	4-1-55	
143	WAS REED-129C-71A	4-1-55	
144	WAS REED-129C-71A	4-1-55	
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152	WAS REED-129C-71A	4-1-55	
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189	WAS REED-129C-71A	4-1-55	
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193	WAS REED-129C-71A	4-1-55	



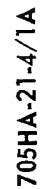
REFDES	PART NO.	QTY	PARTS LIST	DESCRIPTION
A1	300B462	1	AMPLIFIER ASSY-LOAD SENSOR	
	322A932	1	BOARD-INSULATING	
K1	307A49	1	RELAY-START RUN	
	323P151	1	SOCKET	
K2	307G665	1	CONTACTOR	
	332-112	2	TERMINAL	
	307AGE3	2	JUMPER	
K3	320B144	1	RELAY-CRANKING LIMITER	
K4	307A645	1	RELAY-TIME DELAY STARTING (2S)	
	323P360	1	SOCKET	
R1	307A252	1	RESISTOR, 300-OHM, 25W	
R2	304A66	1	RESISTOR, 10-OHM, 50 W	
S1	308PBB	1	SWITCH-AUTO MANUAL	
T1	315A241	1	TRANS. ASSY-CURRENT	
TB1	332A639	1	BLOCK-TERMINAL	
	38A1927	1	SILK SCREEN	
TB2	332-112	2	TERMINAL-GROUND	
R3	304A231	1	RESISTOR, 10-OHM, 25 W	
R4	352-114	1	RESISTOR, 62-OHM, 2W	
	301D2573	1	CONTROL BOX	
	98C1815	1	SILK SCREEN	
	98A1957	1	SILK SCREEN	
	301B2586	1	TRIM	
	518P237	3	FASTER-TRIM	
	R15-178	1	SCREW-HEX, NO. 10-32X.34LG	
	850-30	1	LOCKWASHER #10	
	99A966	1	NAMEPLATE-CONTROL	
	98A2045	1	LABEL, CAUTION	
	334A1690	25PI	WIRE-FLEXIBLE NO. 20 AWG	
	334A1842	12PI	WIRE-FLEXIBLE NO. 16 AWG	
				51121212

705HA-21-3/10A

1	UNION	1	1
2	UNION	2	2
3	UNION	3	3
4	UNION	4	4
5	UNION	5	5
6	UNION	6	6
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100	UNION	100	100

- NOTES:
1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2). THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
4. MOUNT SWITCH WITH FINISHING NUT ON THE FRONT PANEL.

SCHEMATIC

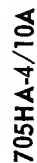


(K) 2 - OPERATE WITH NEGATIVE PRESSURE


1	ADDED NOTE 2	27	9-3-66
2	WIRE CONN. CHANGED	28	9-3-66
3	ADDED CRG	29	9-3-66
4	HAS. NO. 304A5	30	12-11-66
5	WORLD TRAVEL MESSAGE	31	2-7-66
6	ADDED TERMINAL C	32	11-1-65
7	MOVED FROM SENECA	33	9-14-65
8	CADD RS 350-1132	34	6-8-65
9	ADDED 332-707	35	6-3-65
10	ADDED 332-4266	36	4-3-65
11	ADDED 332-4266	37	4-3-65
12	ADDED 332-4266	38	4-3-65
13	ADDED 332-4266	39	4-3-65
14	ADDED 332-4266	40	4-3-65
15	ADDED 332-4266	41	4-3-65
16	ADDED 332-4266	42	4-3-65
17	ADDED 332-4266	43	4-3-65
18	ADDED 332-4266	44	4-3-65
19	ADDED 332-4266	45	4-3-65
20	ADDED 332-4266	46	4-3-65
21	ADDED 332-4266	47	4-3-65
22	ADDED 332-4266	48	4-3-65
23	ADDED 332-4266	49	4-3-65
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73	ADDED 332-4266	99	4-3-65
74	ADDED 332-4266	100	4-3-65

Onan

705HA-21-4/1A	MODEL	4-16-55	CMH	IV. HJB
120 VOLT 1 PH		AUTOMATIC DEMAND		
2 WIRE 50-60 ~		CONTROL WIRING DIAGRAM		
32 V. CRANKING		617 C 80		



⑥ 2- OPERATE WITH NEGATIVE GROUND ONLY


 DIVISION OF STUDYBAKES CORPORATION
 REVISION _____ DATE _____

DATE	MODEL	REV	REV
11-20-65	705HA-21-4/10A	75	75
120 VOLT 1 PH. 2 WIRE 50-60 ~ 32 V. CRANKING			
AUTOMATIC DEMAND CONTROL WIRING DIAGRAM			
(PAGE TWO)			
617 C87			

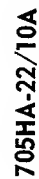


17	REVISION	C48	DATE
8	A WAS BOK ASSY. 301B2588	7	6-4-65
9	WAS 332 A707	7	6-4-65
10	MOVED TO FROM SEN SIDE	37	9-14-65
11	D ADDED TERMINAL 6	37	11-1-65
12	E MOVED TO E WAS NO 315A223	37	2-7-66
13	F ADDED C46	37	4-7-66
14	G WIRE CONN. CORRECTED	37	6-25-66

5-5-45	W. J. B.	Ev, WJB
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
CONFIDENTIAL WINNING DIAGRAM

617683



NOTE:
WIRES TO LOAO SENSOR AMPLIFIER N°20
OTHER WIRES N°20 OR LARGER.

6	WIRE CONNET DMS CORRECTED	7-17-66	25-66
5	REMOVED T. W. NO 384233	7-17-66	
4	MOVED T. W. NO 384233	7-17-66	
3	ADDED TEAM ALB	7-17-66	
2	MOVED T. W. FROM GEN SIDE	7-17-66	
1	B WAS 332.45	7-17-66	
A	WAS BOK 331.82588	7-17-66	
	REVISION	001	DATE
11			



DESIGN OF TRANSMITTER COMBINATION

Manufacturer, Inc.

DATE	7-15-65	CKH	DATE	7-17-66
UNIT	AUTOMATIC DEMAND			
CONTROL WIRING DIAGRAM				
DWG NO.	617 C 77			

MODEL

705HA-22/10A

240VOLT 1PH.

2 WIRE 50-60~

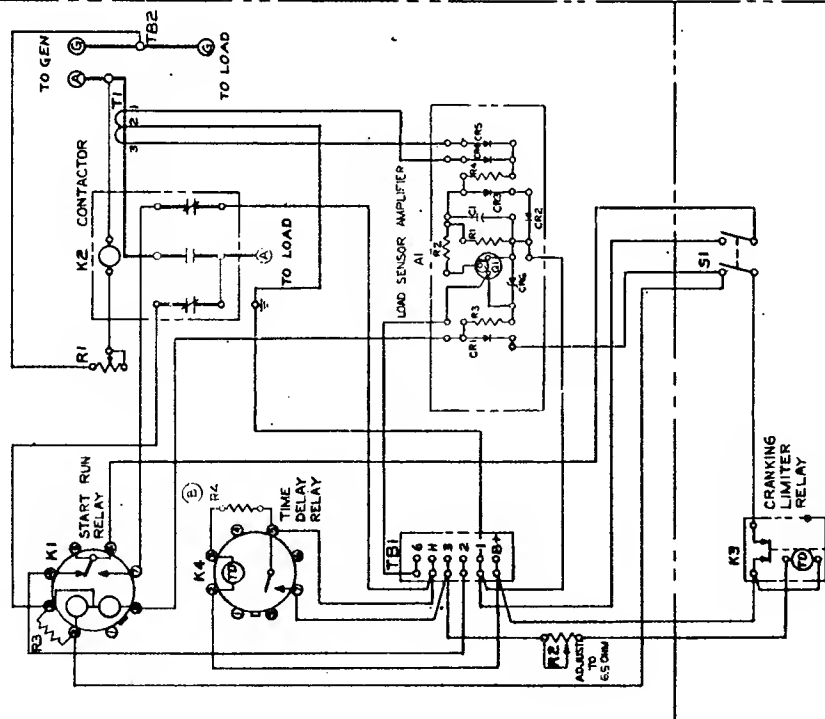
12 V. CRANKING

617 C 77

617C109

WIRING DIAGRAM

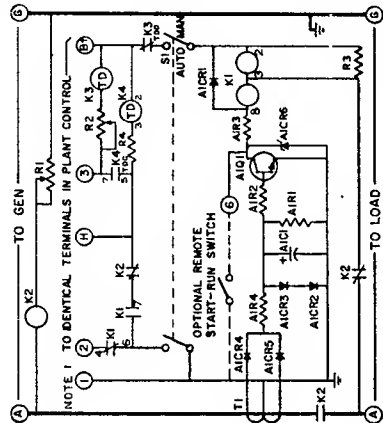
FRONT VIEW OF CHASSIS



NOTES:

1. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
2. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

SCHEMATIC



REF DES	PART NO	QTY	DESCRIPTION
A1	300B482	1	AMPLIFIER ASSY-LOAD SENSOR
N1	324A932	1	BOARD-INSULATING
N1	324A932	1	RELAY-START RUN
K2	307C654	1	CONTACTOR
K3	307C654	1	CRANKING LIMITER
K4	307A125	1	RELAY-TIME DELAY, START RUN
R1	304A121	1	RESISTOR 750-0HM 25W
R2	304A66	1	RESISTOR 10-0HM 10W
R3	304A66	1	RESISTOR 10-0HM 10W
R4	304A66	1	RESISTOR 10-0HM 10W
R5	304A66	1	RESISTOR 10-0HM 10W
R6	304A66	1	RESISTOR 10-0HM 10W
R7	304A66	1	RESISTOR 10-0HM 10W
R8	304A66	1	RESISTOR 10-0HM 10W
R9	304A66	1	RESISTOR 10-0HM 10W
R10	304A66	1	RESISTOR 10-0HM 10W
R11	304A66	1	RESISTOR 10-0HM 10W
R12	304A66	1	RESISTOR 10-0HM 10W
R13	304A66	1	RESISTOR 10-0HM 10W
R14	304A66	1	RESISTOR 10-0HM 10W
R15	304A66	1	RESISTOR 10-0HM 10W
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R98	304A66	1	RESISTOR 10-0HM 10W
R99	304A66	1	RESISTOR 10-0HM 10W
R100	304A66	1	RESISTOR 10-0HM 10W

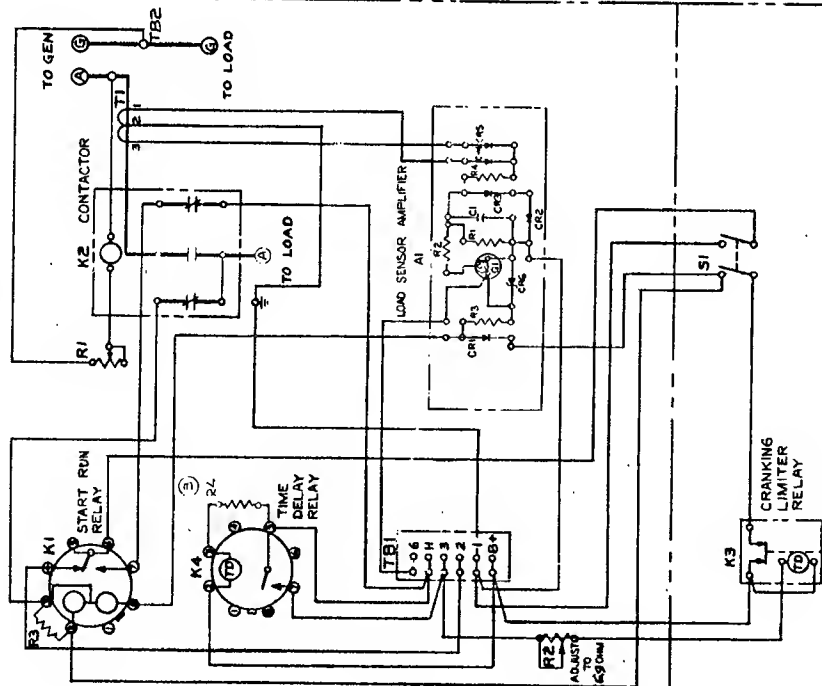
705HA-22-3/10A

1	300B482	1	AMPLIFIER ASSY-LOAD SENSOR
2	324A932	1	BOARD-INSULATING
3	324A932	1	RELAY-START RUN
4	307C654	1	CONTACTOR
5	307C654	1	CRANKING LIMITER
6	307A125	1	RELAY-TIME DELAY, START RUN
7	304A121	1	RESISTOR 750-0HM 25W
8	304A66	1	RESISTOR 10-0HM 10W
9	304A66	1	RESISTOR 10-0HM 10W
10	304A66	1	RESISTOR 10-0HM 10W
11	304A66	1	RESISTOR 10-0HM 10W
12	304A66	1	RESISTOR 10-0HM 10W
13	304A66	1	RESISTOR 10-0HM 10W
14	304A66	1	RESISTOR 10-0HM 10W
15	304A66	1	RESISTOR 10-0HM 10W
16	304A66	1	RESISTOR 10-0HM 10W
17	304A66	1	RESISTOR 10-0HM 10W
18	304A66	1	RESISTOR 10-0HM 10W
19	304A66	1	RESISTOR 10-0HM 10W
20	304A66	1	RESISTOR 10-0HM 10W
21	304A66	1	RESISTOR 10-0HM 10W
22	304A66	1	RESISTOR 10-0HM 10W
23	304A66	1	RESISTOR 10-0HM 10W
24	304A66	1	RESISTOR 10-0HM 10W
25	304A66	1	RESISTOR 10-0HM 10W
26	304A66	1	RESISTOR 10-0HM 10W
27	304A66	1	RESISTOR 10-0HM 10W
28	304A66	1	RESISTOR 10-0HM 10W
29	304A66	1	RESISTOR 10-0HM 10W
30	304A66	1	RESISTOR 10-0HM 10W
31	304A66	1	RESISTOR 10-0HM 10W
32	304A66	1	RESISTOR 10-0HM 10W
33	304A66	1	RESISTOR 10-0HM 10W
34	304A66	1	RESISTOR 10-0HM 10W
35	304A66	1	RESISTOR 10-0HM 10W
36	304A66	1	RESISTOR 10-0HM 10W
37	304A66	1	RESISTOR 10-0HM 10W
38	304A66	1	RESISTOR 10-0HM 10W
39	304A66	1	RESISTOR 10-0HM 10W
40	304A66	1	RESISTOR 10-0HM 10W
41	304A66	1	RESISTOR 10-0HM 10W
42	304A66	1	RESISTOR 10-0HM 10W
43	304A66	1	RESISTOR 10-0HM 10W
44	304A66	1	RESISTOR 10-0HM 10W
45	304A66	1	RESISTOR 10-0HM 10W
46	304A66	1	RESISTOR 10-0HM 10W
47	304A66	1	RESISTOR 10-0HM 10W
48	304A66	1	RESISTOR 10-0HM 10W
49	304A66	1	RESISTOR 10-0HM 10W
50	304A66	1	RESISTOR 10-0HM 10W
51	304A66	1	RESISTOR 10-0HM 10W
52	304A66	1	RESISTOR 10-0HM 10W
53	304A66	1	RESISTOR 10-0HM 10W
54	304A66	1	RESISTOR 10-0HM 10W
55	304A66	1	RESISTOR 10-0HM 10W
56	304A66	1	RESISTOR 10-0HM 10W
57	304A66	1	RESISTOR 10-0HM 10W
58	304A66	1	RESISTOR 10-0HM 10W
59	304A66	1	RESISTOR 10-0HM 10W
60	304A66	1	RESISTOR 10-0HM 10W
61	304A66	1	RESISTOR 10-0HM 10W
62	304A66	1	RESISTOR 10-0HM 10W
63	304A66	1	RESISTOR 10-0HM 10W
64	304A66	1	RESISTOR 10-0HM 10W
65	304A66	1	RESISTOR 10-0HM 10W
66	304A66	1	RESISTOR 10-0HM 10W
67	304A66	1	RESISTOR 10-0HM 10W
68	304A66	1	RESISTOR 10-0HM 10W
69	304A66	1	RESISTOR 10-0HM 10W
70	304A66	1	RESISTOR 10-0HM 10W
71	304A66	1	RESISTOR 10-0HM 10W
72	304A66	1	RESISTOR 10-0HM 10W
73	304A66	1	RESISTOR 10-0HM 10W
74	304A66	1	RESISTOR 10-0HM 10W
75	304A66	1	RESISTOR 10-0HM 10W
76	304A66	1	RESISTOR 10-0HM 10W
77	304A66	1	RESISTOR 10-0HM 10W
78	304A66	1	RESISTOR 10-0HM 10W
79	304A66	1	RESISTOR 10-0HM 10W
80	304A66	1	RESISTOR 10-0HM 10W
81	304A66	1	RESISTOR 10-0HM 10W
82	304A66	1	RESISTOR 10-0HM 10W
83	304A66	1	RESISTOR 10-0HM 10W
84	304A66	1	RESISTOR 10-0HM 10W
85	304A66	1	RESISTOR 10-0HM 10W
86	304A66	1	RESISTOR 10-0HM 10W
87	304A66	1	RESISTOR 10-0HM 10W
88	304A66	1	RESISTOR 10-0HM 10W
89	304A66	1	RESISTOR 10-0HM 10W
90	304A66	1	RESISTOR 10-0HM 10W
91	304A66	1	RESISTOR 10-0HM 10W
92	304A66	1	RESISTOR 10-0HM 10W
93	304A66	1	RESISTOR 10-0HM 10W
94	304A66	1	RESISTOR 10-0HM 10W
95	304A66	1	RESISTOR 10-0HM 10W
96	304A66	1	RESISTOR 10-0HM 10W
97	304A66	1	RESISTOR 10-0HM 10W
98	304A66	1	RESISTOR 10-0HM 10W
99	304A66	1	RESISTOR 10-0HM 10W
100	304A66	1	RESISTOR 10-0HM 10W

705HA-22-3/10A
24 VOLT CRANKING
240 V, 1 PH.
2 W, 50/60 Hz

SCHEMATIC & WIRING DIAGRAM
AUTOMATIC DEMAND CONTROL
617C109

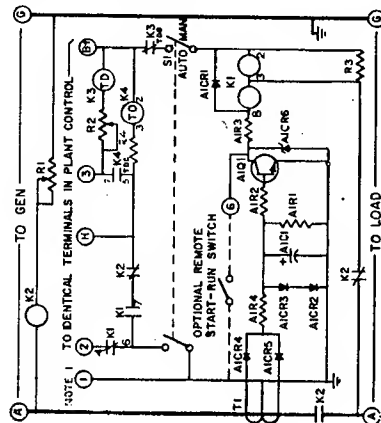
FRONT VIEW OF CHASSIS



NOTES:

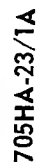
1. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
2. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

SCHEMATIC

[illegible]

705HA-22-3/12A

[illegible]




⑥ 2- OPERATE WITH NEGATIVE GROUND ONLY

[illegible]



⑥ 2-OPERATE WITH NEGATIVE GROUND ONLY

6	ADDED NOTE 2	TV	9-13-66
F	ADDED CRL	JL	4-13-66
E	ADDED 100 ~ RES	JV	4-13-66
D	ADDED TERMINAL 6	JV	11-1-65
C	MOVED FROM GEN SIDE	JV	9-18-65
B	VMS NO 32A707	JV	6-4-65
A	WAS BOX ASSY NO 3016388	JV	6-4-65
UT	INSTRON	CR	DATE

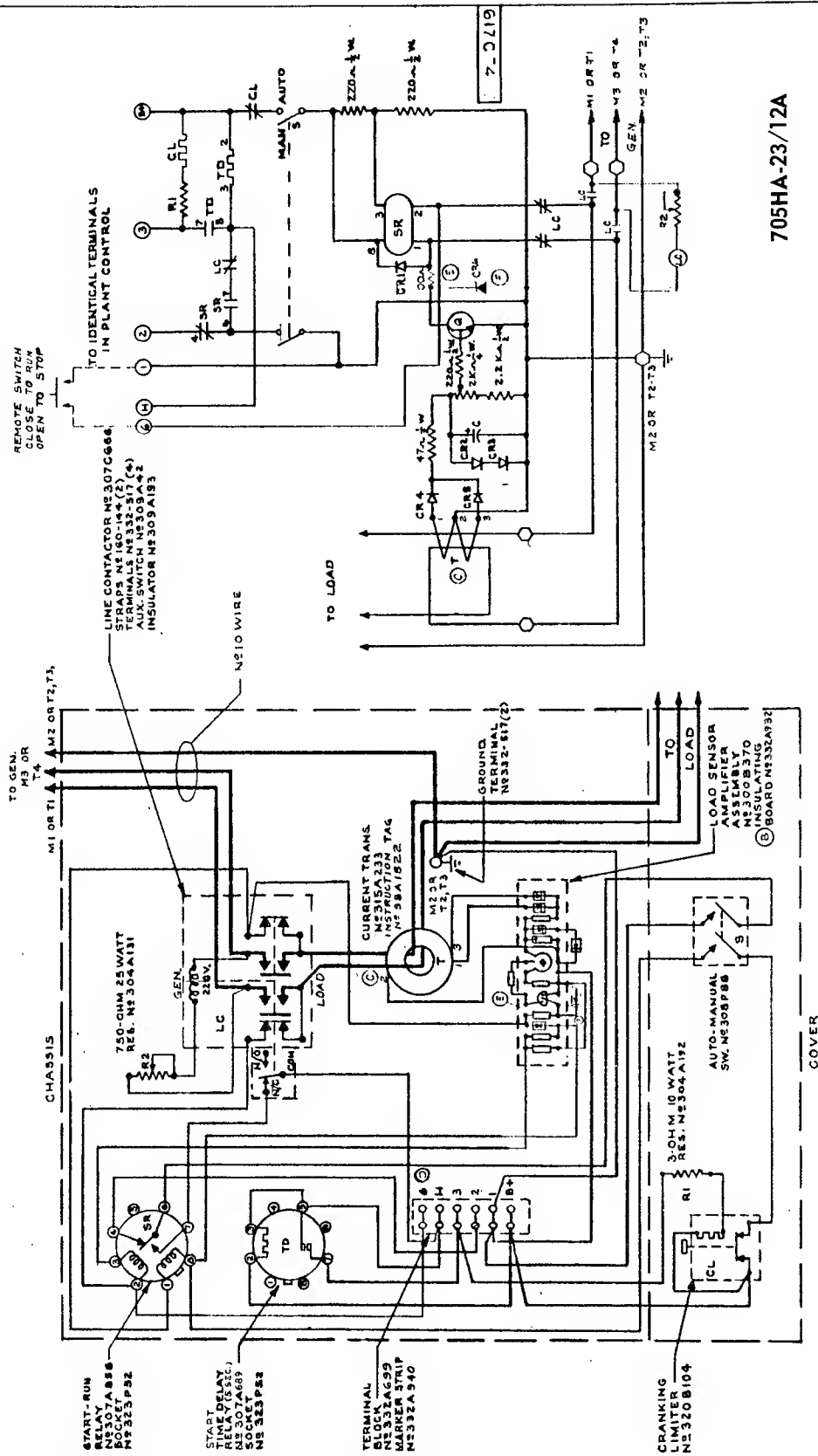
 DIVISION OF STURGEON CORPORATION INTERNATIONAL PATENT		MODEL 705HA-23/10A	
S.W.G. 120-240VOLT 1PH, 3 WIRE 50-60-	S.C.S. 120-240VOLT 1PH, 3 WIRE 50-60-	C.A.H. 120-240VOLT 1PH, 3 WIRE 50-60-	J.V.W.B. 120-240VOLT 1PH, 3 WIRE 50-60-
AUTOMATIC DEMAND CONTROL WIRING DIAGRAM		617 C75	

817C74

PICTORIAL

75HA-23/12A

SCHEMATIC



705HA-23/12A

NOTE:
1- WIRES TO LOAD SENSOR AMPLIFIER N220
OTHER WIRES N220 OR LARGER.

(2) 2- OPERATE WITH NEGATIVE GROUND ONLY

6	ADDED NOTE 2	1/19/56
5	ADDED 2.96	7/18/56
4	ADDED 2.96	7/18/56
3	ADDED 2.96	7/18/56
2	ADDED 2.96	7/18/56
1	ADDED 2.96	7/18/56
0	ADDED 2.96	7/18/56
1	ADDED 2.96	7/18/56
2	ADDED 2.96	7/18/56
3	ADDED 2.96	7/18/56
4	ADDED 2.96	7/18/56
5	ADDED 2.96	7/18/56
6	ADDED 2.96	7/18/56
7	ADDED 2.96	7/18/56
8	ADDED 2.96	7/18/56
9	ADDED 2.96	7/18/56
0	ADDED 2.96	7/18/56
1	ADDED 2.96	7/18/56
2	ADDED 2.96	7/18/56
3	ADDED 2.96	7/18/56
4	ADDED 2.96	7/18/56
5	ADDED 2.96	7/18/56
6	ADDED 2.96	7/18/56
7	ADDED 2.96	7/18/56
8	ADDED 2.96	7/18/56
9	ADDED 2.96	7/18/56
0	ADDED 2.96	7/18/56

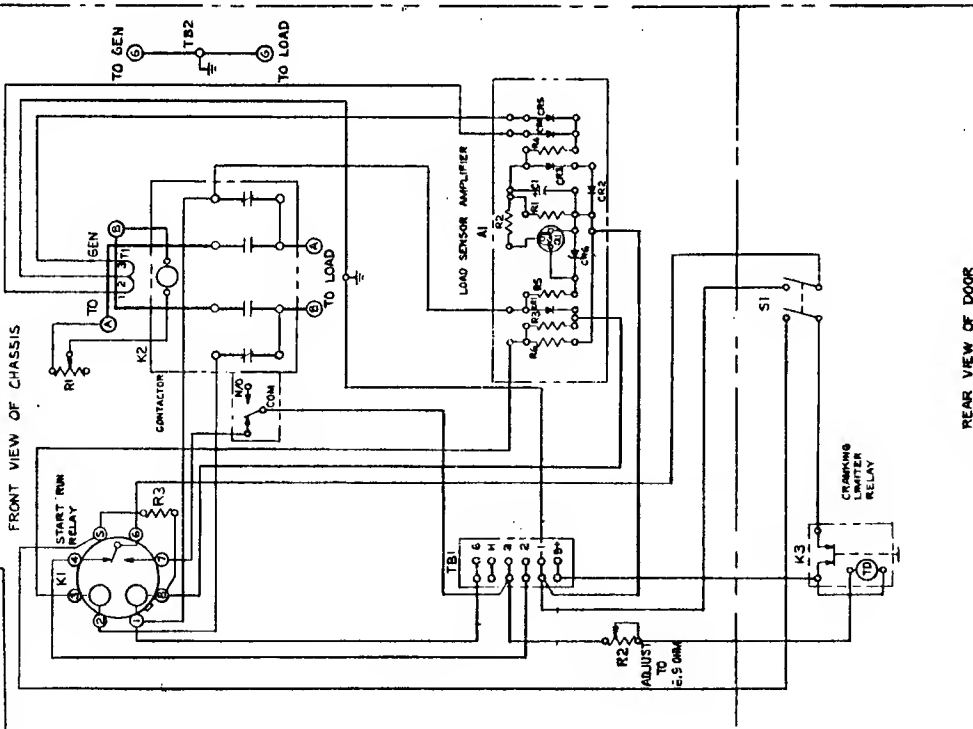
ORDER

DATE	4-8-55	BY	CMH	REV	17, 17B
MODEL	75HA-23/12A	NAME	AUTOMATIC DEMAND		
	120-240VOLT		CONTROL WIRING DIAGRAM		
	1PH. 3 WIRE 50-60				
	12 V. CRANKING				
					617 C74

617C124

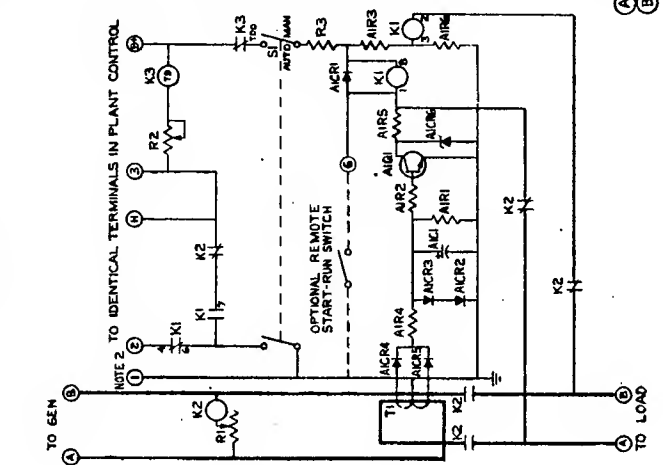
WIRING DIAGRAM

FRONT VIEW OF CHASSIS



REAR VIEW OF DOOR

SCHEMATIC



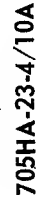
PARTS LIST

REF ID	PART NO.	QTY	DESCRIPTION
A1	300B463	1	AMPLIFIER ASSY - LOAD SENSOR
A2	300B463	1	BOARD - INSULATING
K1	307A358	1	RELAY - START RUN
K2	307C266	1	CONTACTOR
K3	307C266	1	CONTACTOR
R1	307C266	1	CAUTION LABEL
R2	307C266	2	STRAP
R3	307C266	2	STRAP
S1	307C266	4	TERMINAL
S2	307C266	1	SWITCH - AUX
S3	307C266	1	INSULATOR
S4	307C266	1	RELAY - CRANKING LIMITER
S5	307C266	1	RESISTOR, 750 OHM, 25 W
S6	307C266	1	RESISTOR, 15 OHM, 50 W
S7	307C266	1	RESISTOR, 750 OHM, 2 W
S8	307C266	1	SWITCH - AUTO MANUAL
S9	307C266	1	TRANS. ASSY - CURRENT
S10	307C266	1	BLOCK - TERMINAL
S11	307C266	1	SILK SCREEN
S12	307C266	2	TERMINAL - GROUND
S13	307C266	1	CONTROL BOX
S14	307C266	1	SILK SCREEN
S15	307C266	1	SILK SCREEN
S16	307C266	1	TRIM
S17	307C266	3	FASTENER - TRIM
S18	307C266	1	SCREW - HEX #10-32 X 5/8 LG
S19	307C266	1	LOCKWASHER #10
S20	307C266	1	NAMEPLATE - CONTROL
S21	307C266	1	421C124

705HA-23-3/1A

- CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
- IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
- NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

705HA-23-3/1A	1-25-68	CDR	617C124
24 VOLT CRANKING	180/240 V, 1 PH, 3 WIRE, 50/60 CY		
3 WIRE, 50/60 CY			

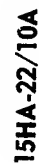


(J) 2 - OPERATE WITH NEGATIVE GROUND ONLY

J. ACC'D. NOTE. 2	27	9-13-66
UNAS. 50428.62	30	4-28-66
UNAS. 50428.62	31	4-28-66
ACC'D. CRYG.	32	4-17-66
ACC'D. CRYG.	33	4-17-66
ACC'D. 504. RES	34	4-17-66
D. ACC'D. TERMINAL 6	35	11-1-65
C. MOVED - MEM. GEN. SIDE	36	9-14-65
IT WAS 532.87	37	6-3-65
A. WAS BOX ASSY. 301B. 508	38	6-3-65
DATE	DATE	DATE
LET	LET	LET

ORION DIVISION OF TUCKER CORPORATION
Baltimore, Maryland

WAT. 9-25	CKH	27	27	WJ B
AUTOMATIC DEMAND CONTROL WIRING DIAGRAM				
617 C76				
END NO				



LEI	REVISION	CBS	DATE
F	ADDED CRU	1	4-7-66
E	MOVED "1" WAS NO. 315423	10	2-7-66
C	ADDED TERMINAL 6	10	10-19-65
D	MOVED "1" FROM SIDE	9	9-14-65
B	WAS 332 A 767	4	4-7-63
A	WAS BOX 4554, 1010158	1	4-3-65

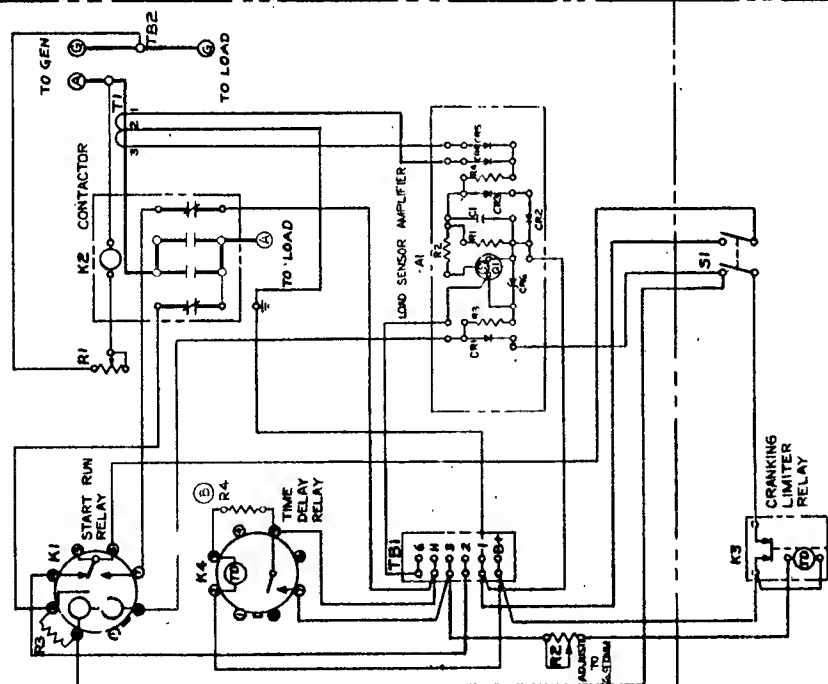
KODAK
 DIVISION OF KODAK SAFETY CORPORATION
 1158 Broadway, New York, N.Y. 10036

DATE	4.12.65	CKH	JY, NJB
MODEL			
15HA-22/10A			
AUTOMATIC DEMAND			

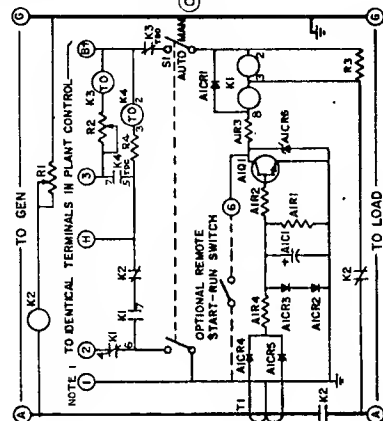
240VOLT 1PH. 2 WIRE 50-60~	CONTROL WIRING DIAGRAM
12 V. CRANKING	DWG NO. 617 C 71

WIRING DIAGRAM

FRONT VIEW OF CHASSIS



SCHEMATIC

[illegible]

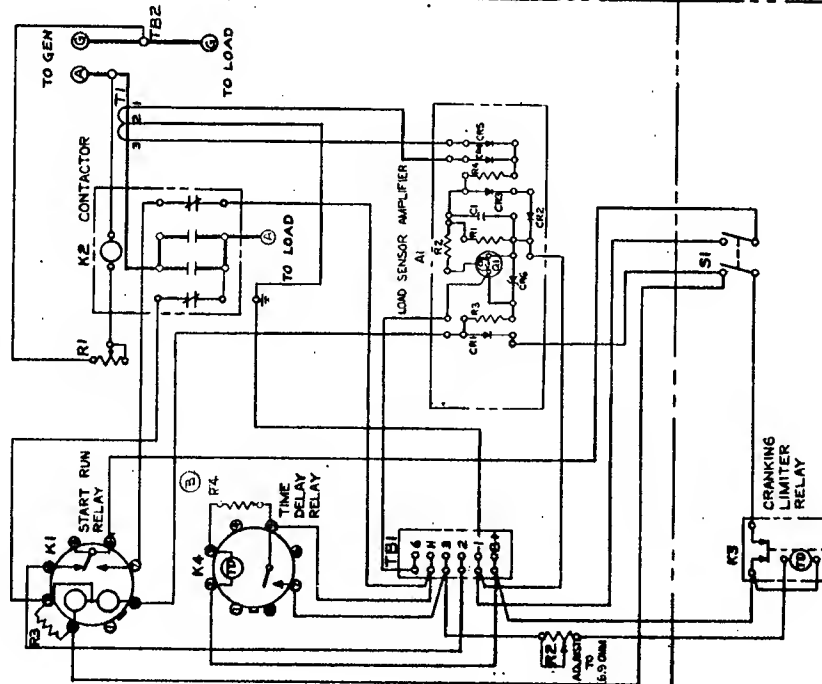
15HA-22-3/10A

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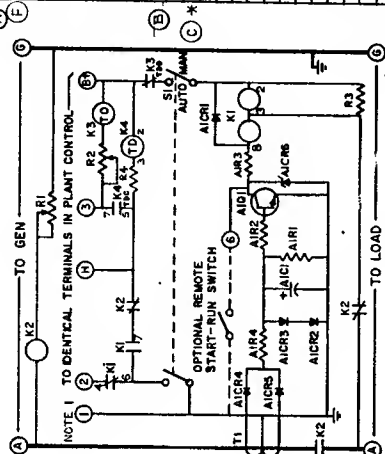
NOTES:

1. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
2. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

FRONT VIEW OF CHASSIS



PARIS LIST



REFDES	PART NO	QTY	PARTS LIST
A1	300B482	1	AMPLIFIER ASSY-LOAD SENSOR
K1	307A62	1	BOARD-INSULATING
K2	307A62	1	RELAY-START RUN
K3	307C380	1	SOCKET
K4	307C566	1	CONTACTOR
K5	307A142	2	TERMINAL
K6	307A455	2	JUMPER
K7	302B104	1	RELAY-CRANKING LIMITER
K8	307A589	1	RELAY-TIME DELAY, STARTING ES
R1	302P380	1	SOCKET
R2	304A131	1	RESISTOR, 750-OHM, 25W
R3	304A66	1	RESISTOR, 10-OHM, 50W
S1	308P88	1	SWITCH-AUTO MANUAL
T1	315A241	1	TRANS. ASSY- CURRENT
T2	332A699	1	BLOCK- TERMINAL
T3	308A927	1	SILK SCREEN
T4	332-142	2	TERMINAL- GROUND
R4	304A47	1	RESISTOR, 15-OHM, 25 W
R5	352-114	1	RESISTOR, 62-OHM, 2.5W
	96A2045	1	CAUTION LABEL
	301D2573	1	CONTROL BOX
	58C1815	1	SILK SCREEN
	98A1957	1	SILK SCREEN
	301B2566	1	TRIM
	518P237	3	FASTENER- TRIM
	815-178	1	SCREW-HEX HD #4-32X1/16
	850-50	1	LOCKWASHER #10
	99A966	1	NAMEPLATE-CONTROL
	334A1890	25 FT	WIRE-FLEXIBLE NC-25-2-5
	334A1842	12 FT	WIRE-FLEXIBLE NC-16-2-3
			10101719

15HA-22-3/12A

[illegible]

○ 科學社

DATE	TIME	BY	NO.	REV.	W/B
12/1/68	10:00	J. J.	100	1	W/B

SCHEMATIC WIRING DIAGRAM
AUTOMATIC DEMAND CONTROL

617C107

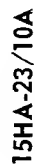
15A-22-3/24

24 VOLT CRANKING


240 V₂ 1 PH.
2W, 50/60CY.

NOTES:

1. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
2. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.



⑥ 2- OPERATE WITH NEGATIVE GROUND ONLY

MODEL	150HA-23/10A		
	120-240VOLT		
	1PH. 3WIRE 50-60		
	TO WIRING		
DATE	4-12-65	CHK	OK
TIME	2:14 P.M.		
 DIVISION OF PROGRESS CORPORATION 10000 W. 10th Avenue, Minneapolis, Minnesota			
LET	INTENTION		
DATE	4-12-65		
BY	W. J. W.B.		
NAME AUTOMATIC DEMAND CONTROL WIRING DIAGRAM SHEET NO. 617 C 70			
G	ADDED NOTE 2	7-12-66	
A	ADDED 100A	7-12-66	
E	ADDED 100A RES	7-12-66	
C	RECEIVED TERMINAL 2	7-12-66	
C	CHANGED FROM GEN SV	7-12-66	
B	WAS N2382A707	6-3-65	
A	WAS BOK A55330B2508	6-3-65	

SCHEMATIC



NOTE:
WIRES TO LOAD SENSOR AMPLIFIER NO. 20
OTHER WIRES NO. 20 OR LARGER.

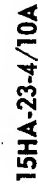
15HA-23/12A	NAME	AUTOMATIC DEMAND
120-240 VOLT		CONTROL WIRING DIAGRAM
1PH 3 WIRE 50-60~	REF. NO.	517 C 69
12 V CRANKING		

SCHEMATIC



15HA-23-3/12A

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY



① J 2-OPERATE WITH NEGATIVE GROUND ONLY

J	ADDED NOTE 2	37	9-13-66
K	WAS 307A/66	38	4-28-66
L	WAS 307A/66	39	4-28-66
M	ADDED CRG	40	4-13-66
N	ADDED 100 A RES	41	0-13-66
O	ADDED TERMINAL 6	42	10-29-65
P	MOVED T FROM GEN SIDE	43	6-13-65
Q	WAS 332 A 707	44	6-13-65
R	WAS BDK ASST 301B/2888	45	6-13-65
UT	version	46	late

DIVISION OF FURNACE CONSTRUCTION
MEMPHIS, TENNESSEE

00000

DATE	12-65	CHK	BY	JY, WJB
NAME AUTOMATIC DEMAND CONTROL WIRING DIAGRAM				
SHEET NO 617 C 72				

MODEL	15HA-23-A/10A
VOLT	120-240 VOLT
PH. SWINE	50-60-
V. CRANKING	32 V. CRANKING

617 C 72

**INDEX
FOR
SPEC B CONTROLS**

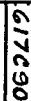
Find the appropriate model and proceed to the indicated page for the wiring diagram.

WATT RATING	MODEL	WIRING DIAGRAM	PAGE
3,500	305HA-21/1	617C90	35
	305HA-21/10	617C91	36
7,500	7.5HA-21/1	617C92	37
	7.5HA-21/10	617C93	38
	7.5HA-21/12	617C94	39
	7.5HA-21/17	617C129	40
	7.5HA-21-4/1	617C113	41
	7.5HA-21-4/10	617C114	42
	7.5HA-22/1	617C95	43
	7.5HA-22/10	617C96	44
	7.5HA-22/12	617C97	45
	7.5HA-23/1	617C102	46
	7.5HA-23/10	617C101	47
	7.5HA-23/12	617C103	48
	7.5HA-23-4/1	617C128	49
	7.5HA-23-4/10	617C111	50
15,000	15.0HA-22/10	617C98	51
	15.0HA-22/12	617C99	52
	15.0HA-23/1	617C100	53
	15.0HA-23/10	617C105	54
	15.0HA-23/12	617C104	55
	15.0HA-23/15	617C116	56
	15.0HA-23/17	617C130	57
	15.0HA-23/18	617C131	58
	15.0HA-23-4/10	617C112	59

FRONT VIEW OF CHASSIS



1. OPERATE WITH NEGATIVE GROUND ONLY
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GND, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GND IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.



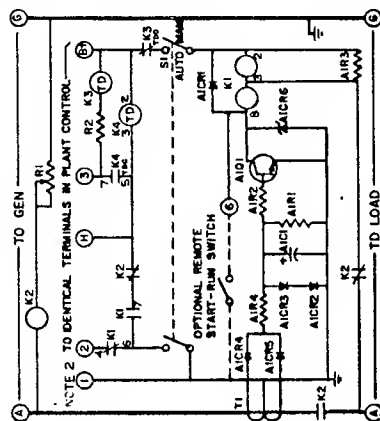
305HA-21/1B

[illegible]

C	WLS 32B P52 SOCKET	7	119-67
A	00-00 00-00 B 3	10-31-67	
B	ADDED LABEL 3-26-68	10-31-67	
S	SWEDS DPO SAME REPAIRED B-27-66		
LT	Serial Number	Date	Notes
O-000			
REPAIR OF TRANSDUCER CONDUCTIVITY			
DATE RECEIVED: 11/10/67			
BY	DATE	LOC.	WLB
27-6-67	CR	ON	
SCHEMATIC & WIRING DIAGRAM AUTOMATIC DEMAND CONTROL			
617C90			
SERIAL NO.			
305NA-21/B			
12 VOLT CRANKING			
120V. 1 PH.			
2W. 100/200Y			

WIRING DIAGRAM

SCHEMATIC



REF DES	PART NO	QTY	PARTS LIST	DESCRIPTION
A1	300B437	1	AMPLIFIER ASSY-LOAD SENSOR	
	302A932	1	BOARD-INSULATING	
K1	307A62	1	RELAY-START RUN	
	303P350	1	SOCKET	
A2	307C663	1	CONTACTOR	
	332-517	2	TERMINAL	
	98A2043	1	CAUTION LABEL	
A3	300B104	1	RELAY-CRANKING LIMITER	
K4	307A645	1	RELAY-TIME DELAY-START/STOP	
	323P350	1	SOCKET	
R1	301A282	1	RESISTOR 300-OHM, 25W	
R2	304A192	1	RESISTOR 3-OHM, 10W	
S1	308P08	1	SWITCH-AUTO MANUAL	
	315A241	1	TRANS. ASSY- CURRENT	
T1	332A439	1	BLOCK-TERMINAL	
	98A1927	1	SILK SCREEN	
TB2	332-517	2	TERMINAL- GROUND	
	301D2573	1	CONTROL BOX	
	98C1815	1	SILK SCREEN	
	98A1528	1	SILK SCREEN	
	301B2584	1	TRIM	
	518P237	3	FASTENER- TRIM	
	815-178	1	SCREW-HEX MD-32X1/8	
	850-30	1	LOCKWASHER #10	
	95A966	1	NAMEPLATE-CONTROL	
				1C7GCI

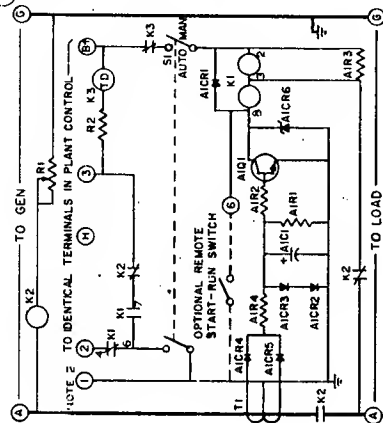
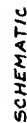
305HA-21/10B

[illegible]

NOTE:

- NOTE: 1- OPERATE WITH NEGATIVE GROUND ONLY
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2) - THE AC INPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

FRONT VIEW OF CHASSIS

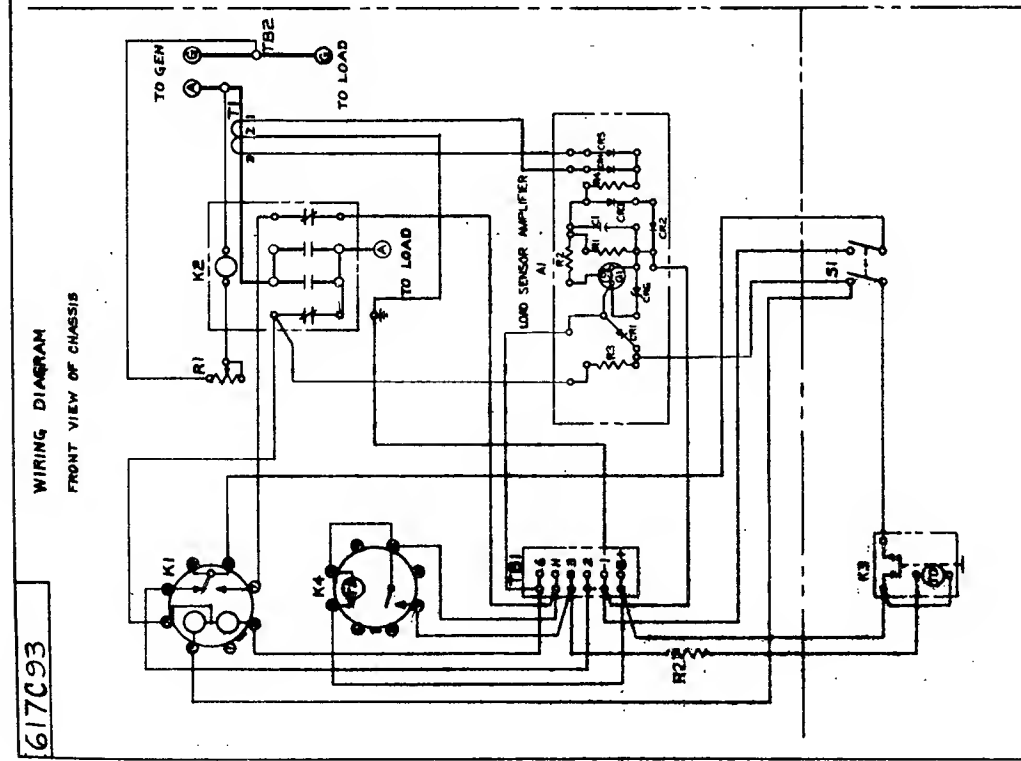
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7.5HA-21/1B

NOTE:

1. - OPERATE WITH NEGATIVE GROUND ONLY .
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (A2). THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

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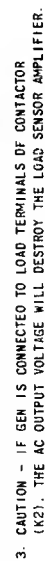
- NOTE:
- 1 - OPERATE WITH NEGATIVE GROUND ONLY
 2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
 3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

REFS	PART NO.	QTY	DESCRIPTION
A1	300B437	1	AMPLIFIER ASSY-LOAD SENSOR
K1	302A932	1	BOARD-INSULATING
K2	307A62	1	RELAY-START RUN
K3	329P380	1	SOCKET
K4	307C665	1	CONTACTOR
	332-142	2	TERMINAL
	307A685	2	JUMPER
K3	302B104	1	RELAY-CRANKING LIMITER
K4	307A645	1	RELAY-TIME DELAY (REAR/CRANK)
	329P380	1	SOCKET
R1	304A282	1	RESISTOR 300-OHM .25W
R2	304A192	1	RESISTOR 3-OHM .10W
S1	308P68	1	SWITCH-AUTO MANUAL
T1	315A241	1	TRANS. ASSY-CURRENT
T2	332A699	1	BLOCK-SCREEN
T3	308A192	1	TERMINAL-SCREEN
T4	332-142	2	TERMINAL-GROUND
	98A2045	1	CAUTION LABEL
	301D2573	1	CONTROL BOX
	38C1B15	1	SILK SCREEN
	98A1928	1	SILK SCREEN
	301B256	1	TRIM
	318P237	3	FASTENER-TRIM
	815-178	1	SCREW-HEX HD #8-32X1/16
	850-30	1	LOCKWASHER #10
	99A966	1	NAMEPLATE-CONTROL

7.5HA-21/10B

D	WAS 323PS2 SOCKET	1	11-9-67
C	"	"	11-9-67
B	ADDED NOTES 2 & 3	"	10-31-67
A	ADDED LABEL 38A2645	"	10-31-67
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FRONT VIEW OF CHASSIS



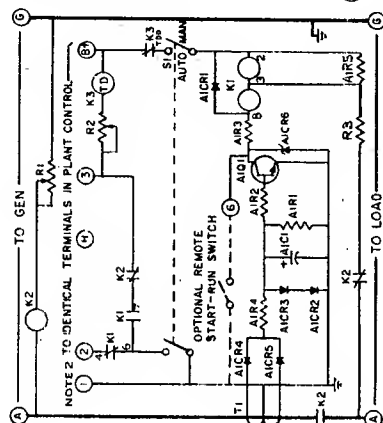
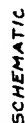
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7.5HA-21/12B

[illegible]

FRONT VIEW OF CHASSIS

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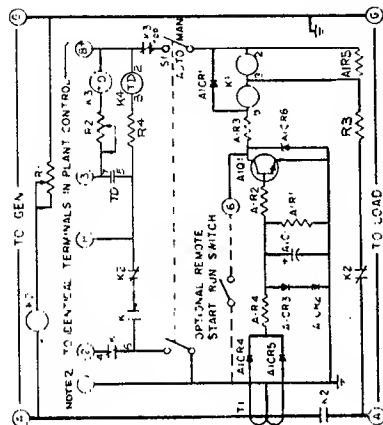
7.5HA-21-4/1B

I. OPERATE WITH NEGATIVE GROUND ONLY.

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
4. MOUNT SWITCH WITH FINISHING NUT ON THE FRONT PANEL.

[illegible]

7.5NA-21-4/1B
332 VOLT CRANKING
1120 V, 1 PH.
2W. 50/60 CY.



SCHEMATIC

REF ID	PCB NO	PCB TYPE	PARTS LIST	REMARKS
A1	300B49E	AMPLIFIER ASSY-LOAD SENSOR		
	302A32E	BOARD-INSULATING		
X1	303A92E	RELAY-START RUN		
	303A92C	SOCKET		
A2	307C68E	CONTACTOR		
	302A41	TERMINAL		
	307A55E	CONNECTER		
M3	300B10A	RELAY-CRANKING LIMITER		
M4	307A67E	RELAY-TIME-DELAY 20 SEC		
R4	3050-520	RESISTOR-470HM 1/2W		
R1	304A25E	RESISTOR-300-0HM 25W		
R2	304A22E	RESISTOR-3-0HM 50W		
S1	308A88E	SWITCH-AUTO MANUAL		
T1	315A241	TRANS ASSY-CURRENT		
T81	332A699	BLOCK-TERMINAL		
	98A1927	SILK SCREEN		
T82	332-142	TERMINAL-ROUND		
R3	304A520	RESISTOR-30-0HM 10W		
	301D2573	CONTROL BOX		
	98C1815	SILK SCREEN		
	98A1957	SILK SCREEN		
	301B258E	TRIM		
	51B2P37	FEASENER-TRIM		
	815-178	SCREW-HEX HD #6-32X.98LG		
	850-30	LOCKWASHER #10		
	99A966	NAMEPLATE-CONTROL		
	98A2045	LABEL-CUTION		
	33XA1890	25 FT WIRE-E/E 15E	NO.20 AWG	
	33XA1642	12 FT WIRE-E/E 15E	NO.16 AWG	

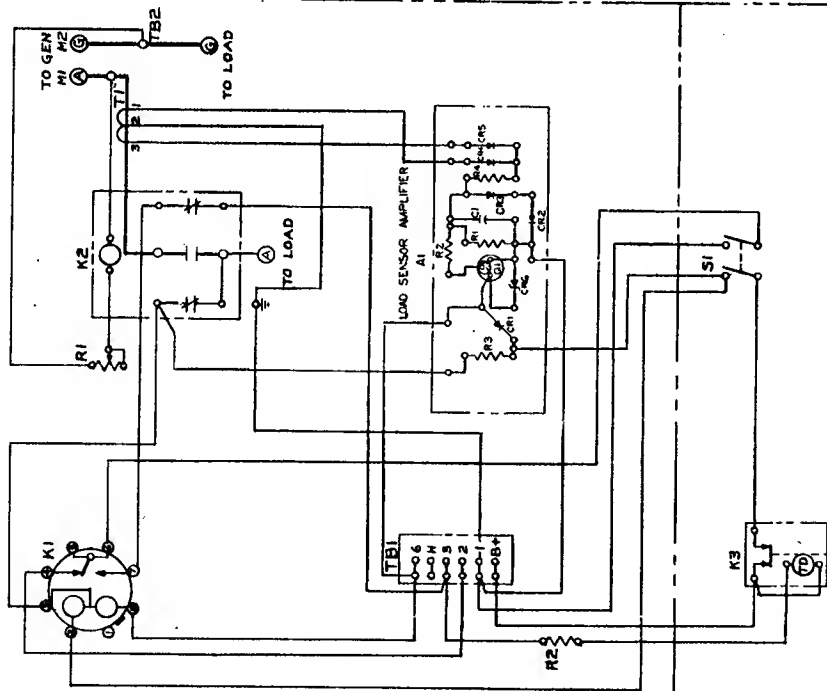
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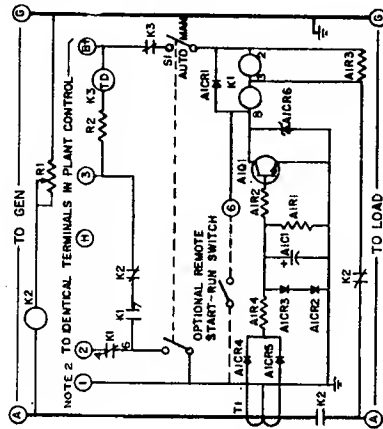
NOTES:

1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
4. MOUNT SWITCH WITH FINISHING NUT ON THE FRONT PANEL.

FRONT VIEW OF CHASSIS

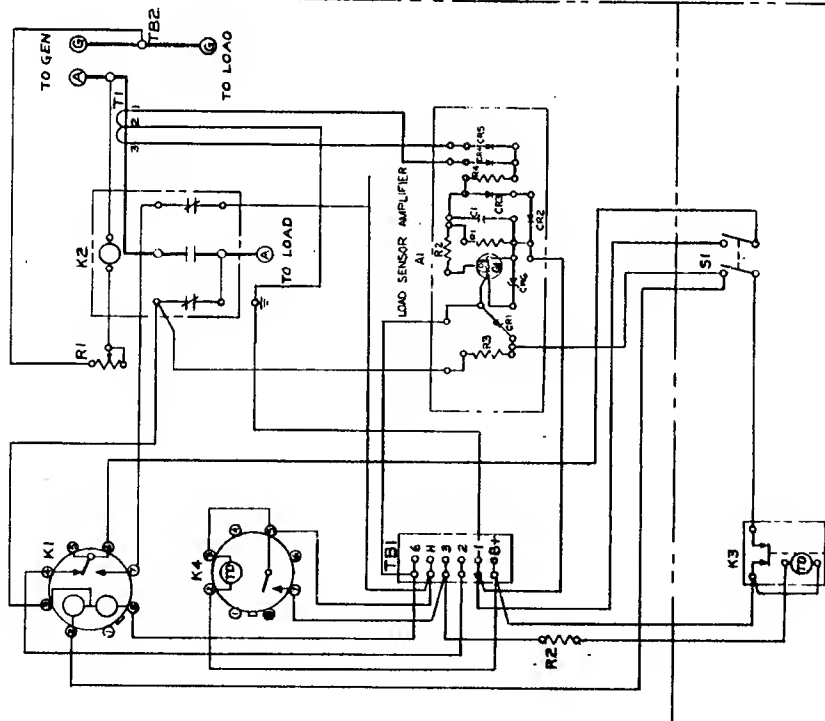


3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2). THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

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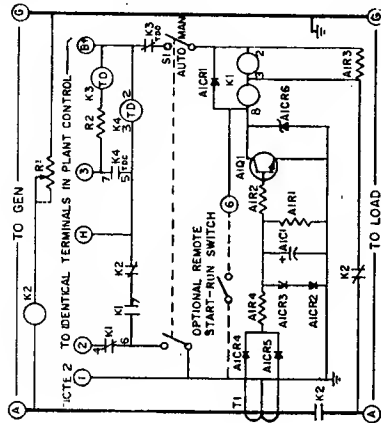
7.5HA-22/1B

C	WAS 323P52 SOCKET	74	11-9-67
B	ADDED NOTES 2 & 3	74	10-31-67
A	ADDED LABEL 96-2045	74	10-31-67
	1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007		
REF	REVISED	DATE	BY
Origin DIVISION OF THOMSON CORPORATION 1500			



3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2). THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

PARTS LIST

[illegible]

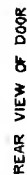
7.5HA-22/12B

D	NAS 323P52	SECRET	IN	11-4-67
C	"	"	IN	11-9-67
B	ADDED NOTES 2 & 3		IN	10-31-67
A	ADDED 4, 5, 6, 7, 8, 9, 10, 11, 12		IN	10-31-67
	ADDED 13, 14, 15, 16, 17, 18, 19, 20		IN	10-31-67
	ADDED 21, 22, 23, 24, 25, 26, 27, 28, 29, 30		IN	10-31-67
101	REPRODUCTION		101	DATE

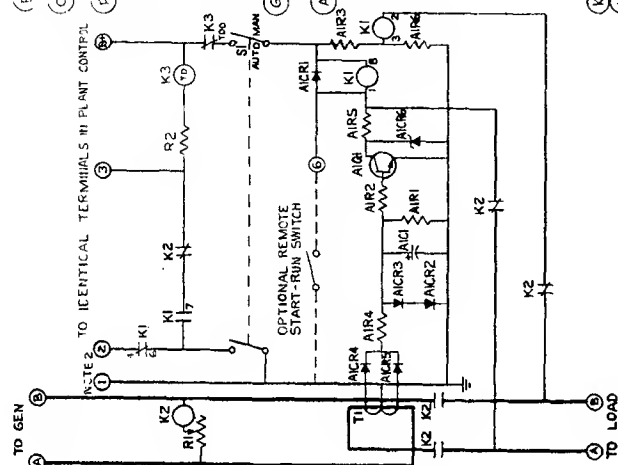
O **on**
 DIVISION OF TELETYPE CORPORATION

1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389 1390 1391 1392 1393 1394 1395 1396 1397 1398 1399 1400 1401 1402 1403 1404 1405 1406 1407 1408 1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1420 1421 1422 1423 1424 1425 1426 1427 1428 1429 1430 1431 1432 1433 1434 1435 1436 1437 1438 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500 1501 1502 1503 1504 1505 1506 1507 1508 1509 1510 1511 1512 1513 1514 1515 1516 1517 1518 1519 1520 1521 1522 1523 1524 1525 1526 1527 1528 1529 1530 1531 1532 1533 1534 1535 1536 1537 1538 1539 1540 1541 1542 1543 1544 1545 1546 1547 1548 1549 1550 1551 1552 1553 1554 1555 1556 1557 1558 1559 1560 1561 1562 1563 1564 1565 1566 1567 1568 1569 1570 1571 1572 1573 1574 1575 1576 1577 1578 1579 1580 1581 1582 1583 1584 1585 1586 1587 1588 1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1599 1600 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1620 1621 1622 1623 1624 1625 1626 1627 1628 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649 1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1660 1661 1662 1663 1664 1665 1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677 1678 1679 1680 1681 1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695 1696 1697 1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1

WIRING DIAGRAM
FRONT VIEW OF CHASSIS




PARTS LIST



REFDES	PART NO	QTY	PARTS LIST
A1	300B463	1	AMPLIFIER ASSY - LOAD SENSOR
	302A932	1	BOARD - INSULATING
K1	307A658	1	RELAY - START RUN
	323P35C	1	SOCKET
K2	307C666	1	CONTRACTOR
	498A7045	1	CAUTION LABEL
	160-144	2	STRAP
	332-517	4	TERMINAL
	309A42	1	SWITCH - AUX
	309A193	1	INSULATOR
K3	320B104	1	RELAY - CRANKING LIMITER
R1	304A121	1	RESISTOR, 750 OHM, 25W
R2	304A192	1	RESISTOR, 3 OHM, 10W
S1	308P88	1	SWITCH - AUTO MANUAL
T1	315A291	1	TRANS. ASSY - CURRENT
T81	332A699	1	BLOCK - TERMINAL
	98A1927	1	SILK SCREEN
T82	332-517	2	TERMINAL - GROUND
	301D2573	1	CONTROL BOX
	98C1815	1	SILK SCREEN
	98A1949	1	SILK SCREEN
	301B2386	1	TRIM
	518P237	3	FASTENER - TRIM
	915-108	1	SCREW - HEX HD #10-32 X 5/8 LG
	850-30	1	LOCKWASHER HD
	99A966	1	NAMEPLATE - CONTROL
	334A1890	23FT	WIRE-FLEXIBLE NO.20 AWG
	334A1842	12FT	WIRE-FLEXIBLE NO.16 AWG

7.5HA-23/1B

L	ADDED WIRE NO. 33A1492	37	1/8	3-14-67
K	" " 33A1493	37	1/8	3-14-67
J	REV. WIRING TERMINAL 6	37	1/8	1-24-68
H	ADDED NOTE #	37	1/8	11-13-67
G	WAS 319A2235	37	1/8	11-13-67
F	WAS 319A2235	37	1/8	11-13-67
E	WAS 333929 SOCKET	37	1/8	11-13-67
D	ADDED NOTES 2 & 3	37	1/8	11-9-67
C	ADDED LABEL 98A20457	37	1/8	11-1-67
B	MOVED LEAD 57 TO K1	37	1/8	7-25-67
A	WAS 332-142	37	1/8	5-1-67
1ST	REVISION	37	1/8	5-1-67



OGION
DIVISION OF HARRIS CORPORATION
Harrisburg, Pennsylvania

DATE	31-29-66	CDR	37	1/8	WLB
12 VOLT CRANKING SCHEMATIC & WIRING DIAGRAM AUTOMATIC DEMAND CONTROL 120/240 V, 1PH, 50/60 CY WIRE. 50/60 CY					

617C102

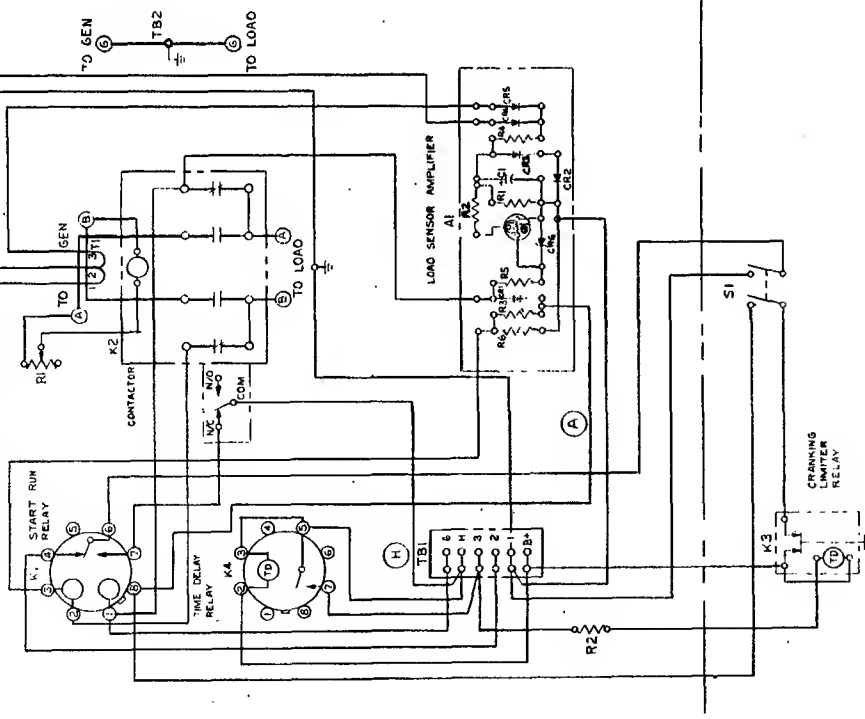
4. MOUNT SWITCH WITH FINISHING NUT ON THE FRONT PANEL.
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

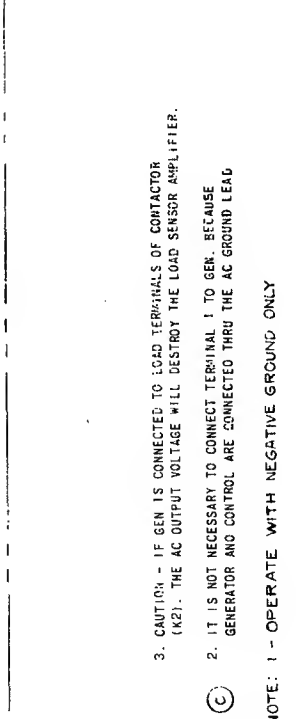
617C101

WIRING DIAGRAM

FRONT VIEW OF CHASSIS



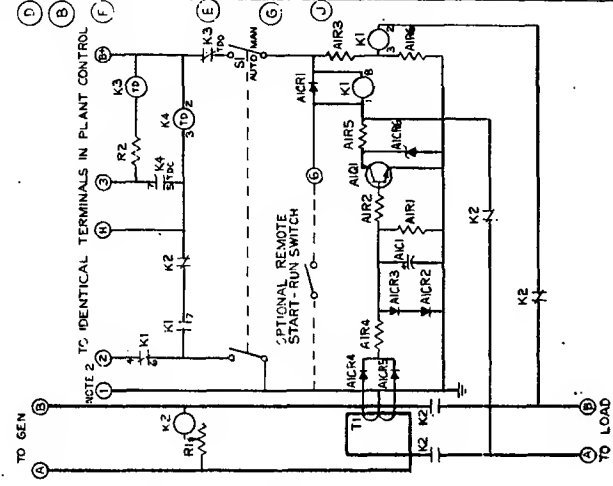
REAR VIEW OF DOOR



- 3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
- 2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

SCHEMATIC



PARTS LIST

REFDES	PART NO	QTY	DESCRIPTION
AI	302463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	322432	1	BOARD - INSULATING
K2	307465	1	RELAY - START RUN
K3	323750	1	SOCKET
K4	307666	1	CONTACTOR
R1	98A2045	1	CAUTION LABEL
R2	160-144	2	STRAP
R3	332-517	4	TERMINAL
R4	309442	1	SWITCH - AUX
R5	309A193	1	INSULATOR
K5	3208104	1	RELAY - CRANKING LIMITER
K6	307645	1	RELAY - TIME DELAY, PREHEAT (20S)
R6	3237380	1	SOCKET
R7	304A131	1	RESISTOR, 750 OHM, 25W
R8	304A192	1	RESISTOR, 3 OHM, 10W
R9	308PBB	1	SWITCH - AUTO MANUAL
T1	315A291	1	TRANS. ASSY - CURRENT
T2	3324699	1	BLOCK - TERMINAL
T3	98A1927	1	SILK SCREEN
T4	332-517	2	TERMINAL - GROUND
T5	301D2573	1	CONTROL BOX
T6	98C1815	1	SILK SCREEN
T7	98A1949	1	SILK SCREEN
T8	301B2586	1	TRIM
T9	51B2537	3	FASTENER - TRIM
T10	615-178	1	SCREW - HEX HD #10-32 X 5/8 LG
T11	650-30	1	LOCKWASHER #10
T12	99A966	1	NAMEPLATE - CONTROL

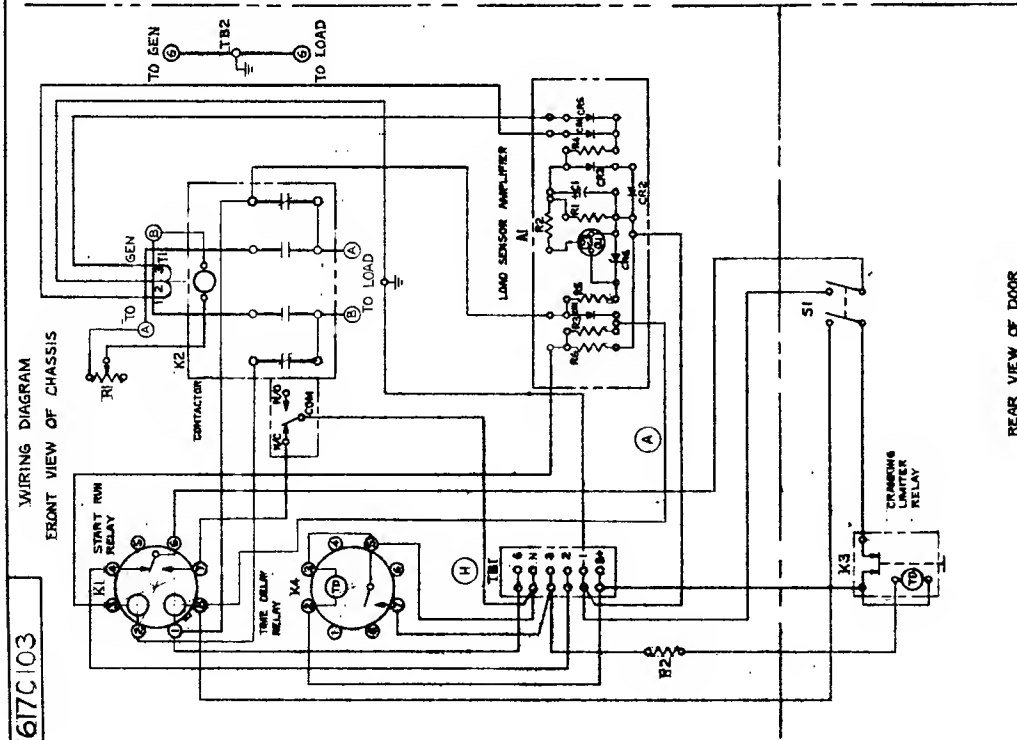
7.5HA-23/10B

1. FET WAS 332-142	2. 20-66
3. RELAY WIRING TERMINAL 6	4. 20-66
5. FET WAS 332-142	6. 20-66
7. FET WAS 332-142	8. 20-66
9. FET WAS 332-142	10. 20-66
11. FET WAS 332-142	12. 20-66
13. FET WAS 332-142	14. 20-66
15. FET WAS 332-142	16. 20-66
17. FET WAS 332-142	18. 20-66
19. FET WAS 332-142	20. 20-66
21. FET WAS 332-142	22. 20-66
23. FET WAS 332-142	24. 20-66
25. FET WAS 332-142	26. 20-66
27. FET WAS 332-142	28. 20-66
29. FET WAS 332-142	30. 20-66
31. FET WAS 332-142	32. 20-66
33. FET WAS 332-142	34. 20-66
35. FET WAS 332-142	36. 20-66
37. FET WAS 332-142	38. 20-66
39. FET WAS 332-142	40. 20-66
41. FET WAS 332-142	42. 20-66
43. FET WAS 332-142	44. 20-66
45. FET WAS 332-142	46. 20-66
47. FET WAS 332-142	48. 20-66
49. FET WAS 332-142	50. 20-66
51. FET WAS 332-142	52. 20-66
53. FET WAS 332-142	54. 20-66
55. FET WAS 332-142	56. 20-66
57. FET WAS 332-142	58. 20-66
59. FET WAS 332-142	60. 20-66
61. FET WAS 332-142	62. 20-66
63. FET WAS 332-142	64. 20-66
65. FET WAS 332-142	66. 20-66
67. FET WAS 332-142	68. 20-66
69. FET WAS 332-142	70. 20-66
71. FET WAS 332-142	72. 20-66
73. FET WAS 332-142	74. 20-66
75. FET WAS 332-142	76. 20-66
77. FET WAS 332-142	78. 20-66
79. FET WAS 332-142	80. 20-66
81. FET WAS 332-142	82. 20-66
83. FET WAS 332-142	84. 20-66
85. FET WAS 332-142	86. 20-66
87. FET WAS 332-142	88. 20-66
89. FET WAS 332-142	90. 20-66
91. FET WAS 332-142	92. 20-66
93. FET WAS 332-142	94. 20-66
95. FET WAS 332-142	96. 20-66
97. FET WAS 332-142	98. 20-66
99. FET WAS 332-142	100. 20-66

Origin

12-23-66	13-23-66	14-23-66	15-23-66	16-23-66	17-23-66	18-23-66	19-23-66	20-23-66	21-23-66	22-23-66	23-23-66	24-23-66	25-23-66	26-23-66	27-23-66	28-23-66	29-23-66	30-23-66	31-23-66	32-23-66	33-23-66	34-23-66	35-23-66	36-23-66	37-23-66	38-23-66	39-23-66	40-23-66	41-23-66	42-23-66	43-23-66	44-23-66	45-23-66	46-23-66	47-23-66	48-23-66	49-23-66	50-23-66	51-23-66	52-23-66	53-23-66	54-23-66	55-23-66	56-23-66	57-23-66	58-23-66	59-23-66	60-23-66	61-23-66	62-23-66	63-23-66	64-23-66	65-23-66	66-23-66	67-23-66	68-23-66	69-23-66	70-23-66	71-23-66	72-23-66	73-23-66	74-23-66	75-23-66	76-23-66	77-23-66	78-23-66	79-23-66	80-23-66	81-23-66	82-23-66	83-23-66	84-23-66	85-23-66	86-23-66	87-23-66	88-23-66	89-23-66	90-23-66	91-23-66	92-23-66	93-23-66	94-23-66	95-23-66	96-23-66	97-23-66	98-23-66	99-23-66	100-23-66
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617C101



REF DES	PART NO	QTY	DESCRIPTION
A1	300B463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	332A932	1	BOARD - INSULATING
K1	307A858	1	RELAY - START RUN
K2	323P380	1	SOCKET
K2	307C666	1	CONTACTOR
	98A2045	1	CAUTION LABEL
	160-144	2	STRAP
	332-517	4	TERMINAL
	309A42	1	SWITCH - AUX
	309A183	1	INSULATOR
K3	320B104	1	RELAY - CRANKING LIMITER
K4	307A689	1	RELAY - TIME DELAY, PREHEAT
	323P380	1	SOCKET
R1	304A131	1	RESISTOR, 750 OHM, 25W
R2	304A192	1	RESISTOR, 3 OHM, 10W
S1	308P88	1	SWITCH - AUTO MANUAL
T1	315A291	1	TRANS. ASSY - CURRENT
TB1	332A699	1	BLOCK - TERMINAL
	98A1927	1	SILK SCREEN
TB2	332-517	2	TERMINAL - GROUND
	301D2573	1	CONTROL BOX
	98C1815	1	SILK SCREEN
	98A1949	1	SILK SCREEN
	301B2586	1	TRIM
	518P937	3	FASTENER - TRIM
	A15-17B	1	SCREW - HEX NO. 10-32 X 5/8 LS
	850-20	1	LOCKWASHER, NO
	98A866	1	NAMEPLATE - CONTROL
	334A1890	25FT	WIRE-FLEXIBLE NO.20AWG
	334A1842	1FT	WIRE-FLEXIBLE NO.10AWG

7.5HA-23/12B

L1	WAS N#10	7-9-69
K	WAS N#12	7-9-69
L	ADDED WIRE NO.334A1842	7-9-69
K	" " " 334A1890	7-9-69
J	TB2 WAS 332-142	7-12-68
H	REV. WIRING TERMINAL 6	7-12-68
G	ADDED 315A291	7-12-68
F	REV.309A830A970 & 315A291	7-12-68
E	WAS 323P52 SOCKET	7-12-68
D	" "	7-12-68
C	ADDED NOTES 2 & 3	7-12-68
B	ADDED LABEL 98A2045	7-12-68
A	ADDED LEAD S1 TO K1	7-12-68
101	REVISION	DATE
0	Original	7-9-69
1	12-29-66	7-9-69
2	12-29-66	7-9-69
3	12-29-66	7-9-69
4	12-29-66	7-9-69
5	12-29-66	7-9-69
6	12-29-66	7-9-69
7	12-29-66	7-9-69
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96	12-29-66	7-9-69
97	12-29-66	7-9-69
98	12-29-66	7-9-69
99	12-29-66	7-9-69
100	12-29-66	7-9-69

617C103

WIRING DIAGRAM

FRONT VIEW OF CHASSIS

REAR VIEW OF DOOR

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

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WIRING DIAGRAM

FRONT VIEW OF CHASSIS

REAR VIEW OF DOOR

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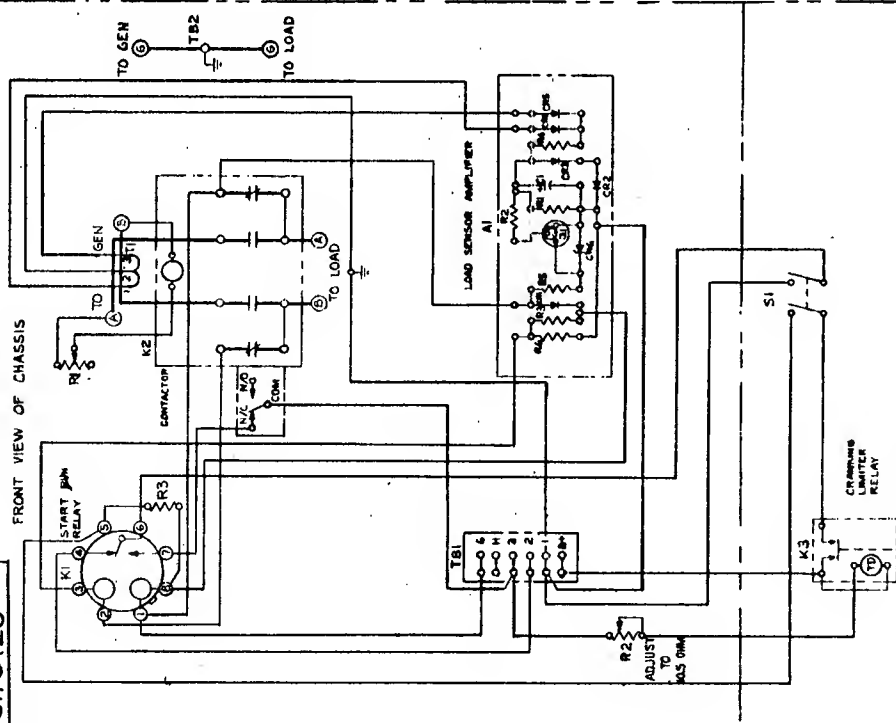
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

617C128

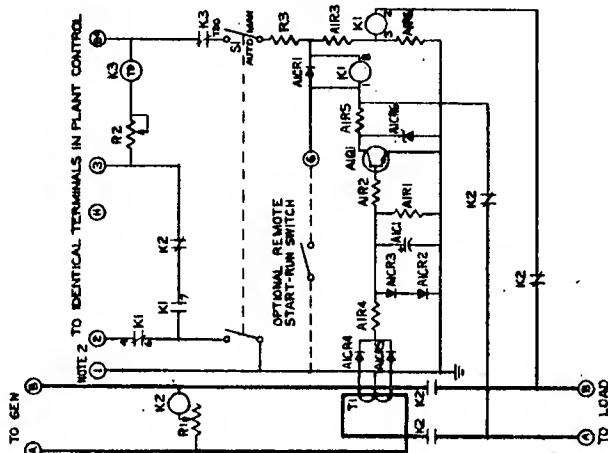
WIRING DIAGRAM

FRONT VIEW OF CHASSIS



REAR VIEW OF DOOR

SCHEMATIC



PARTS LIST

REF ID	PART NO	QTY	DESCRIPTION
A1	300B463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	332A932	1	BOARD - INSULATING
K2	307A858	1	RELAY - START RUN
K3	323P321	1	SOCKET
K4	307C666	1	CONTACTOR
K5	98A2045	1	CAUTION LABEL
K6	160-144	2	STRAP
K7	332-517	4	TERMINAL
K8	309A42	1	SWITCH - AUX
K9	309A183	1	INSULATOR
K10	320B104	1	RELAY - CRANKING LIMITER
R1	304A131	1	RESISTOR, 750 OHM, 25 W
R2	304A222	1	RESISTOR, 15 OHM, 50 W
S1	308P88	1	SWITCH - AUTO MANUAL
T1	313A291	1	TRANS. ASSY - CURRENT
T2	332A659	1	ELECT. - TERMINAL
T3	98A1327	1	SILK SCREEN
T4	332-142	2	TERMINAL - GROUND
R3	350-984	1	RESISTOR, 750 OHM, 2 W
R4	301D2573	1	CONTROL BOX
R5	98C1815	1	SILK SCREEN
R6	98A1949	1	SILK SCREEN
R7	301B3586	1	TRIM
R8	518P237	5	FASTENER - TRIM
R9	115-178	1	SCREW - 1/4" X 1/8" X 1/8"
R10	155-30	1	LOCKWASHER - 1/8"
R11	99A886	1	NAMEPLATE - CONTROL
R12	334A1537	1	20 WIRE WHITE
R13	332-804	1	TERMINAL - 1/2"
R14	332-802	2	TERMINAL - 1/2"
R15	332-803	2	TERMINAL - 1/2"
R16	332-805	2	TERMINAL - 1/2"
R17	332-806	2	TERMINAL - 1/2"
R18	332-807	2	TERMINAL - 1/2"
R19	332-808	2	TERMINAL - 1/2"
R20	332-809	2	TERMINAL - 1/2"
R21	332-810	2	TERMINAL - 1/2"
R22	332-811	2	TERMINAL - 1/2"
R23	332-812	2	TERMINAL - 1/2"
R24	332-813	2	TERMINAL - 1/2"
R25	332-814	2	TERMINAL - 1/2"
R26	332-815	2	TERMINAL - 1/2"
R27	332-816	2	TERMINAL - 1/2"
R28	332-817	2	TERMINAL - 1/2"
R29	332-818	2	TERMINAL - 1/2"
R30	332-819	2	TERMINAL - 1/2"
R31	332-820	2	TERMINAL - 1/2"
R32	332-821	2	TERMINAL - 1/2"
R33	332-822	2	TERMINAL - 1/2"
R34	332-823	2	TERMINAL - 1/2"
R35	332-824	2	TERMINAL - 1/2"
R36	332-825	2	TERMINAL - 1/2"
R37	332-826	2	TERMINAL - 1/2"
R38	332-827	2	TERMINAL - 1/2"
R39	332-828	2	TERMINAL - 1/2"
R40	332-829	2	TERMINAL - 1/2"
R41	332-830	2	TERMINAL - 1/2"
R42	332-831	2	TERMINAL - 1/2"
R43	332-832	2	TERMINAL - 1/2"
R44	332-833	2	TERMINAL - 1/2"
R45	332-834	2	TERMINAL - 1/2"
R46	332-835	2	TERMINAL - 1/2"
R47	332-836	2	TERMINAL - 1/2"
R48	332-837	2	TERMINAL - 1/2"
R49	332-838	2	TERMINAL - 1/2"
R50	332-839	2	TERMINAL - 1/2"
R51	332-840	2	TERMINAL - 1/2"
R52	332-841	2	TERMINAL - 1/2"
R53	332-842	2	TERMINAL - 1/2"
R54	332-843	2	TERMINAL - 1/2"
R55	332-844	2	TERMINAL - 1/2"
R56	332-845	2	TERMINAL - 1/2"
R57	332-846	2	TERMINAL - 1/2"
R58	332-847	2	TERMINAL - 1/2"
R59	332-848	2	TERMINAL - 1/2"
R60	332-849	2	TERMINAL - 1/2"
R61	332-850	2	TERMINAL - 1/2"
R62	332-851	2	TERMINAL - 1/2"
R63	332-852	2	TERMINAL - 1/2"
R64	332-853	2	TERMINAL - 1/2"
R65	332-854	2	TERMINAL - 1/2"
R66	332-855	2	TERMINAL - 1/2"
R67	332-856	2	TERMINAL - 1/2"
R68	332-857	2	TERMINAL - 1/2"
R69	332-858	2	TERMINAL - 1/2"
R70	332-859	2	TERMINAL - 1/2"
R71	332-860	2	TERMINAL - 1/2"
R72	332-861	2	TERMINAL - 1/2"
R73	332-862	2	TERMINAL - 1/2"
R74	332-863	2	TERMINAL - 1/2"
R75	332-864	2	TERMINAL - 1/2"
R76	332-865	2	TERMINAL - 1/2"
R77	332-866	2	TERMINAL - 1/2"
R78	332-867	2	TERMINAL - 1/2"
R79	332-868	2	TERMINAL - 1/2"
R80	332-869	2	TERMINAL - 1/2"
R81	332-870	2	TERMINAL - 1/2"
R82	332-871	2	TERMINAL - 1/2"
R83	332-872	2	TERMINAL - 1/2"
R84	332-873	2	TERMINAL - 1/2"
R85	332-874	2	TERMINAL - 1/2"
R86	332-875	2	TERMINAL - 1/2"
R87	332-876	2	TERMINAL - 1/2"
R88	332-877	2	TERMINAL - 1/2"
R89	332-878	2	TERMINAL - 1/2"
R90	332-879	2	TERMINAL - 1/2"
R91	332-880	2	TERMINAL - 1/2"
R92	332-881	2	TERMINAL - 1/2"
R93	332-882	2	TERMINAL - 1/2"
R94	332-883	2	TERMINAL - 1/2"
R95	332-884	2	TERMINAL - 1/2"
R96	332-885	2	TERMINAL - 1/2"
R97	332-886	2	TERMINAL - 1/2"
R98	332-887	2	TERMINAL - 1/2"
R99	332-888	2	TERMINAL - 1/2"
R100	332-889	2	TERMINAL - 1/2"

7.5HA-23-4/1B

- CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
- IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
- NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

O		7.5HA-23-4/1B	
REV	DATE	REV	DATE
1	6-21-66	1	6-21-66
DESCRIPTION OF REVISIONS		DESCRIPTION OF REVISIONS	
1. SCHEMATIC & WIRING DIAGRAM		1. SCHEMATIC & WIRING DIAGRAM	
2. AUTOMATIC DEMAND CONTROL		2. AUTOMATIC DEMAND CONTROL	
3. WIRE, 50/60 CY		3. WIRE, 50/60 CY	
617C128		617C128	



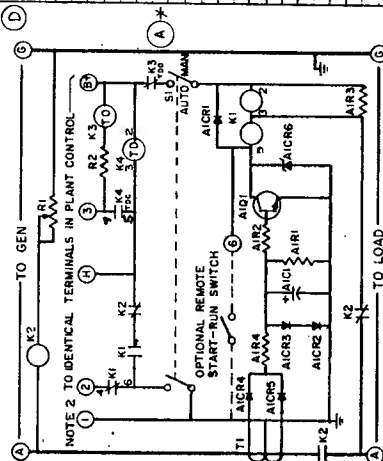
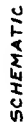
7.5HA-23-4/10B

Conclusion

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

FRONT VIEW OF CHASSIS



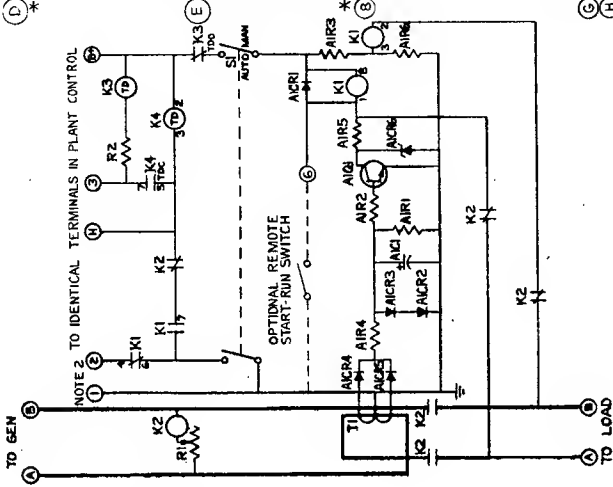
NOTE:

1. OPERATE WITH NEGATIVE GROUND ONLY
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN. BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.
3. CAUTION - IF GEN IS CONNECTED TO LEAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LDAO SENSOR AMPLIFIER.

REF DES	PART NO	QTY	PARTS LIST	DESCRIPTION
A1	300B423	1		AMPLIFIER ASSY-LOAD SENSOR
K1	302A932	1		BOARD-INSULATING
K1	307A62	1		RELAY-START RUN
K2	323P380	1		SOCKET
K2	307C666	1		CONTACTOR
K2	332-142	2		TERMINAL
K3	307A685	5		JUMPER
K3	302B104	1		RELAY-CRANKING LIMITER
K4	307A645	1		RELAY-TIME DELAY,PREHEAT(200)
K4	323P380	1		SOCKET
R1	304A131	1		RESISTOR 750-OHM,25W
R2	304A132	1		RESISTOR 3-OHM,10W
S1	308P58	1		SWITCH-AUTO MANUAL
T1	315A241	1		TRANS ASSY-CURRENT
T81	332A699	1		BLOCK-TERMINAL
T82	98A1927	1		SILK SCREEN
T82	332-142	2		TERMINAL-GROUND
	98A2045	1		CAUTION LABEL
	301D2573	1		CONTROL BOX
	98C1815	1		SILK SCREEN
	98A1528	1		SILK SCREEN
	301B2566	1		TRIM
	518P237	3		FASTENER-TRIM
	815-178	1		SCREW-HEX PC#0.32X3/8LG
	850-30	1		LOCKWASHER #10
	99A956	1		NAMEPLATE-CONTROL
				8601719

[illegible]

SCHEMATIC



REFS	PART NO	QTY	PARTS LIST
AL	302A463	1	AMPLIFIER ASSY - LOAD SENSOR
	302A492	1	BOARD - INSULATING
K1	307A856	1	RELAY - START RUN
	323P380	1	SOCKET
K2	307G667	1	CONTRACTOR
	307A685	4	JUMPER
	160 - 144	2	STRAP
	307A842	2	BAR
	307P942	2	SLEEVING 1/4" OF (898-22)
	332-142	4	TERMINAL
	309A42	1	SWITCH - AUX
	309A15	1	INSULATOR
K3	309A104	1	RELAY - CRANKING LIMITER
K4	307G645	1	RELAY - TIME DELAY, PREHEAT (205)
	323P380	1	SOCKET
R1	304A131	1	RESISTOR, 750 OHM, 25W
R2	304A192	1	RESISTOR, 3 OHM, 1/2W
S1	308P88	1	SWITCH - CRANKING, MANUAL
T1	319A233	1	TRANS. ASSY. - CURRENT
TB1	332A659	1	BLOWER - TERMINAL
	98A1927	1	SILK - SCREEN
TB2	332-142	2	TERMINAL - GROUND
	98A2045	1	CAUTION LABEL
	301D5273	1	CONTROL BOX
	98C1815	1	SILK SCREEN
	98A1545	1	SILK SCREEN
	301B2586	1	TRIM
	518P237	3	FASTENER - TRIM
	815-178	1	SCREW - HEX M 40-32 X 5/8 LG
	850-30	1	LOCKWASHER #10
	99A986	1	NAME PLATE - CONTROL
			501219
	334A890	25 FT	WIRE - FLEXIBLE NO 20 AWG
	334A1842	12 FT	WIRE - FLEXIBLE NO 16 AWG

15.0HA-23/10B

Origin					DIVISION OF TELEPHONE CORPORATION		DATE	
ART	DIVISION	LEAD	CIR	BAYT		DATE	BY	
1	A DDED WIRE NO. 33AAN94B2	7	10-14-68			WJB		
2	A DDED WIRE NO. 33AAIN9501	6	11-24-68			WJB		
3	REV. WIRING TERMINAL C	3	11-24-68			WJB		
4	REAS. WIRING TERMINAL C	3	11-24-68			WJB		
5	REAS. WIRING TERMINAL C	3	11-24-68			WJB		
6	REAS. WIRING TERMINAL C	3	11-24-68			WJB		
7	REAS. WIRING TERMINAL C	3	11-24-68			WJB		
8	REAS. WIRING TERMINAL C	3	11-24-68			WJB		
9	ADDED LABEL 98BA2045	11	11-67			WJB		
10	A MOVED LEAD SI TO K1	7	7-25-67			WJB		
AUTOMATIC DEMAND CONTROL								
617C105								
Spec. 401								

3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

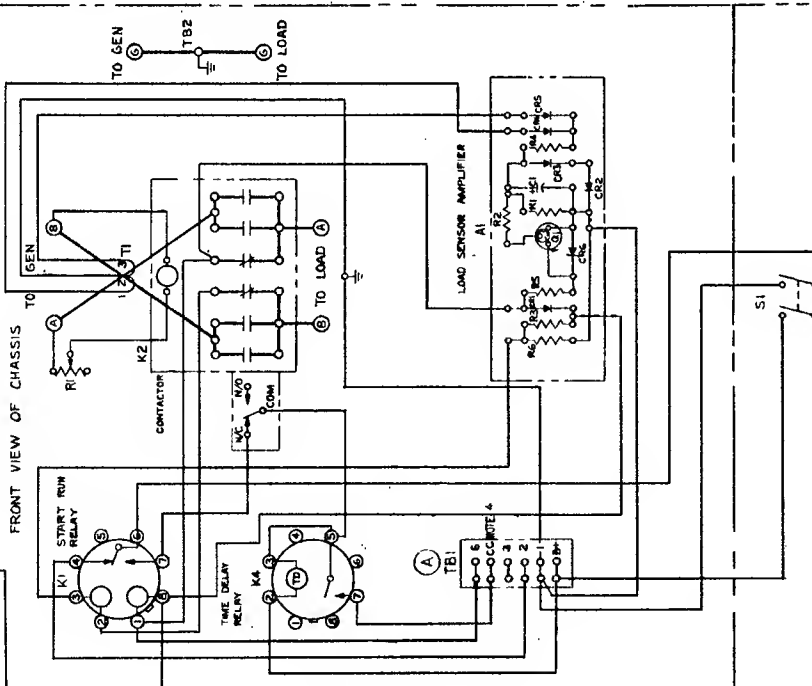
(C)

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

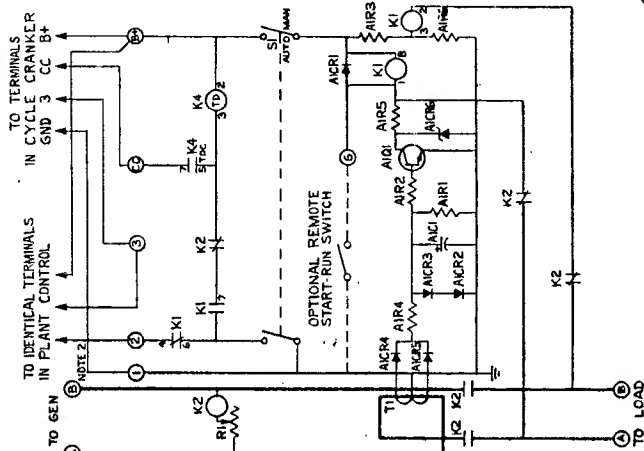
617C116

WIRING DIAGRAM

FRONT VIEW OF CHASSIS



SCHEMATIC



NOTE:
UNLESS OTHERWISE NOTED, ALL
COMPONENTS ARE SHOWN IN THE
DE-ENERGIZED POSITION.

REAR VIEW OF DOOR

7. USE WITH TYPE III CYCLE CRANKER WD. 625B224

6. ON SILKSCREEN 98C1815, PAINT GREEN OVER "CRANKING LIMITER" & "RESET AFTER 1 MINUTE"

5. PASTE PRINT OF SCHEMATIC INSIDE COVER OF CONTROL BOX

4. BESIDE TB1, STAMP CC IN PLACE OF H

3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

15.0HA-23/15B

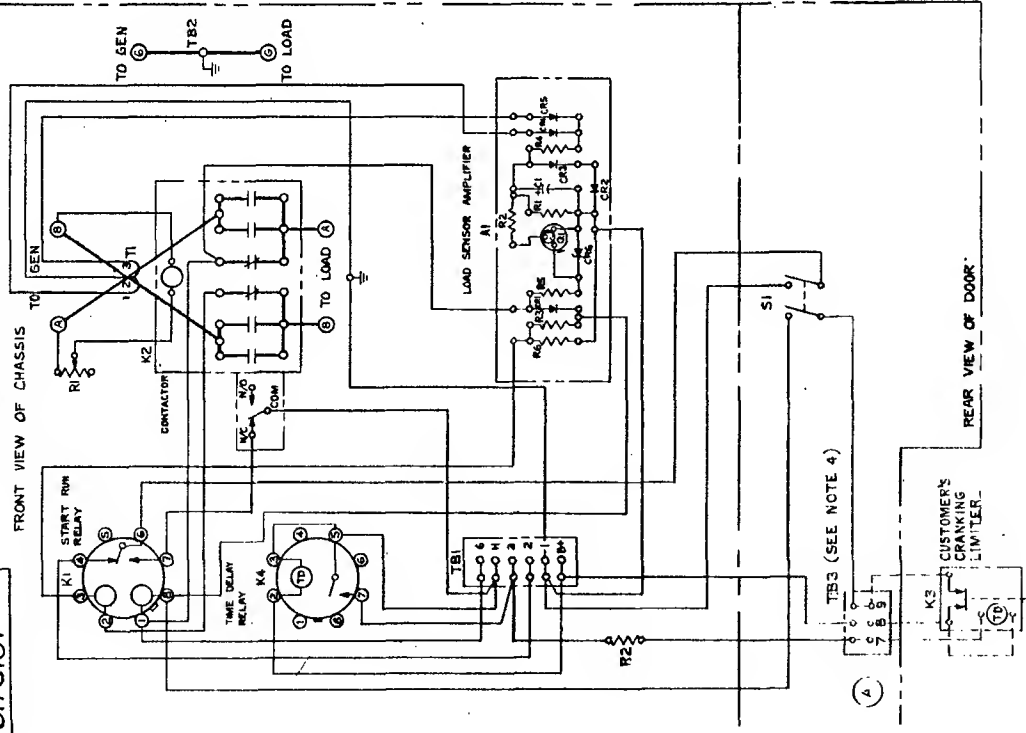
REFDES	PART NO	QTY	DESCRIPTION
A1	3070A463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	307A858	1	BOARD - INSULATING
K2	307A858	1	RELAY - START RUN
K3	307A858	1	SOCKET
K4	307A858	1	CONTACTOR
K5	307A858	1	JUMPER
K6	307A858	1	STRAP
K7	307A858	1	BUS BAR
K8	307A858	1	SLIDING 1 3/4" OF (858-22)
K9	307A858	1	SWITCH - AUT
K10	307A858	1	INSULATOR
K11	307A858	1	RELAY - TIME DELAY, PREHEAT (S)
K12	307A858	1	SOCKET
K13	307A858	1	RESISTOR, 750 OHM, 25W
K14	307A858	1	SWITCH - AUTO MANUAL
K15	307A858	1	MANUAL ASSEMBLY CURRENT
K16	307A858	1	LOCK - TERMINAL
K17	307A858	1	SILK SCREEN
K18	307A858	1	TERMINAL - GROUND
K19	307A858	1	CAUTION LABEL
K20	307A858	1	CONTROL BOX
K21	307A858	1	SILK SCREEN (NOTE 5)
K22	307A858	1	TRIM
K23	307A858	1	PASTENER - TRIM
K24	307A858	1	SCREW - HEX WD #10-32 X 5/8 LG
K25	307A858	1	LOCKWASHER - MC
K26	307A858	1	NAMEPLATE - CONTROL
K27	307A858	1	DOT BUTTON
K28	307A858	1	DOT BUTTON
K29	307A858	1	DOT BUTTON
K30	307A858	1	DOT BUTTON
K31	307A858	1	DOT BUTTON
K32	307A858	1	DOT BUTTON
K33	307A858	1	DOT BUTTON
K34	307A858	1	DOT BUTTON
K35	307A858	1	DOT BUTTON
K36	307A858	1	DOT BUTTON
K37	307A858	1	DOT BUTTON
K38	307A858	1	DOT BUTTON
K39	307A858	1	DOT BUTTON
K40	307A858	1	DOT BUTTON
K41	307A858	1	DOT BUTTON
K42	307A858	1	DOT BUTTON
K43	307A858	1	DOT BUTTON
K44	307A858	1	DOT BUTTON
K45	307A858	1	DOT BUTTON
K46	307A858	1	DOT BUTTON
K47	307A858	1	DOT BUTTON
K48	307A858	1	DOT BUTTON
K49	307A858	1	DOT BUTTON
K50	307A858	1	DOT BUTTON
K51	307A858	1	DOT BUTTON
K52	307A858	1	DOT BUTTON
K53	307A858	1	DOT BUTTON
K54	307A858	1	DOT BUTTON
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K56	307A858	1	DOT BUTTON
K57	307A858	1	DOT BUTTON
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K59	307A858	1	DOT BUTTON
K60	307A858	1	DOT BUTTON
K61	307A858	1	DOT BUTTON
K62	307A858	1	DOT BUTTON
K63	307A858	1	DOT BUTTON
K64	307A858	1	DOT BUTTON
K65	307A858	1	DOT BUTTON
K66	307A858	1	DOT BUTTON
K67	307A858	1	DOT BUTTON
K68	307A858	1	DOT BUTTON
K69	307A858	1	DOT BUTTON
K70	307A858	1	DOT BUTTON
K71	307A858	1	DOT BUTTON
K72	307A858	1	DOT BUTTON
K73	307A858	1	DOT BUTTON
K74	307A858	1	DOT BUTTON
K75	307A858	1	DOT BUTTON
K76	307A858	1	DOT BUTTON
K77	307A858	1	DOT BUTTON
K78	307A858	1	DOT BUTTON
K79	307A858	1	DOT BUTTON
K80	307A858	1	DOT BUTTON
K81	307A858	1	DOT BUTTON
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K88	307A858	1	DOT BUTTON
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K91	307A858	1	DOT BUTTON
K92	307A858	1	DOT BUTTON
K93	307A858	1	DOT BUTTON
K94	307A858	1	DOT BUTTON
K95	307A858	1	DOT BUTTON
K96	307A858	1	DOT BUTTON
K97	307A858	1	DOT BUTTON
K98	307A858	1	DOT BUTTON
K99	307A858	1	DOT BUTTON
K100	307A858	1	DOT BUTTON

15.0HA-23/15B	11-17-57	CDR	1
12 VOLT CRANKING	120/240 V, 1PH,	ALTERNATE DEMAND CONTROL	3 WIRE, 50/60 CY
617C116			

617C131

WIRING DIAGRAM

FRONT VIEW OF CHASSIS

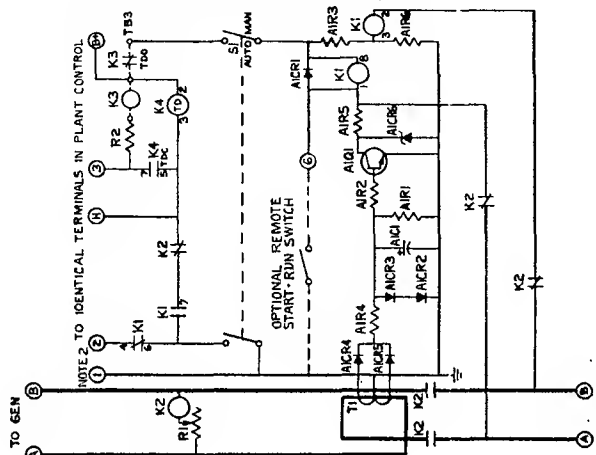


REAR VIEW OF DOOR

4. PAINT BACK OF MARKER STRIP WHITE, BEFORE MOUNTING IT IN BOX
3. CAUTION - IF GEN IS CONNECTED TO LOAD TERMINALS OF CONTACTOR (K2), THE AC OUTPUT VOLTAGE WILL DESTROY THE LOAD SENSOR AMPLIFIER.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GROUND, BECAUSE GENERATOR AND CONTROL ARE CONNECTED THROUGH THE AC GROUND LEAD.

NOTE: 1 - OPERATE WITH NEGATIVE GROUND ONLY

SCHEMATIC



PARTS LIST

REF. DES.	PART NO.	QTY.	DESCRIPTION
AI	300B463	1	AMPLIFIER ASSY - LOAD SENSOR
K1	332A352	1	BOARD - INSULATING
K2	307A558	1	RELAY - START RUN
K3	323P350	1	CONTACTOR
K4	307C667	4	JUMPER
	160-144	2	STRAP
	307A942	2	BUS BAR
	332-142	2	SLEEVING 1/4" OF (818-22)
	309A42	4	TERMINAL
	309A193	1	INSULATOR
K3	320B104REF	1	RELAY - CRANKING LIMITER
K4	307A685	1	RELAY - TIME DELAY, PREHEAT (5 S)
	323P350	1	CONTACTOR
R1	304A131	1	RESISTOR, 750 OHM, 25W
R2	304A192	1	RESISTOR, 3 OHM, 10W
S1	308P88	1	SWITCH - AUTO MANUAL
T1	319A233	1	TRANS. ASSY - CURRENT
T2	332A699	1	BLOCK - TERMINAL
T3	98A1927	1	SILK SCREEN
T4	332-142	2	TERMINAL - GROUND
T5	332A611	1	BLOCK - TERMINAL
T6	332A612	1	STRIP - MARKER (SEE NOTE 4)
	98A2C45	1	CAUTION LABEL
	301D2573	1	CONTROL BOX, MODIFY
	98C1815	1	SILK SCREEN
	98A1949	1	SILK SCREEN
	301B2586	1	TRIM
	518P237	3	FASTENER - TRIM
	815-178	1	SCREW - HEX NO 10-32 X 5/8 LG
	850-30	1	LOCKWASHER #10
	99A566	1	NAMEPLATE - CONTROL
	1C1C1/19		
	334A189025H		WIRE-FLEXIBLE NO 20 AWG
	334A1842		WIRE-FLEXIBLE NO 16 AWG

15.0HA-23/18B

A. ADDITIONAL MARKINGS ON PARTS		DATE	BY
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15.0HA-23/18B
12 VOLT CRANKING
120/240 V, 1PH, 3 WIRE, 50/60 CY

617C131

**INDEX
FOR
SPEC C CONTROLS**

Find the appropriate model and proceed to the indicated page for the wiring diagram.

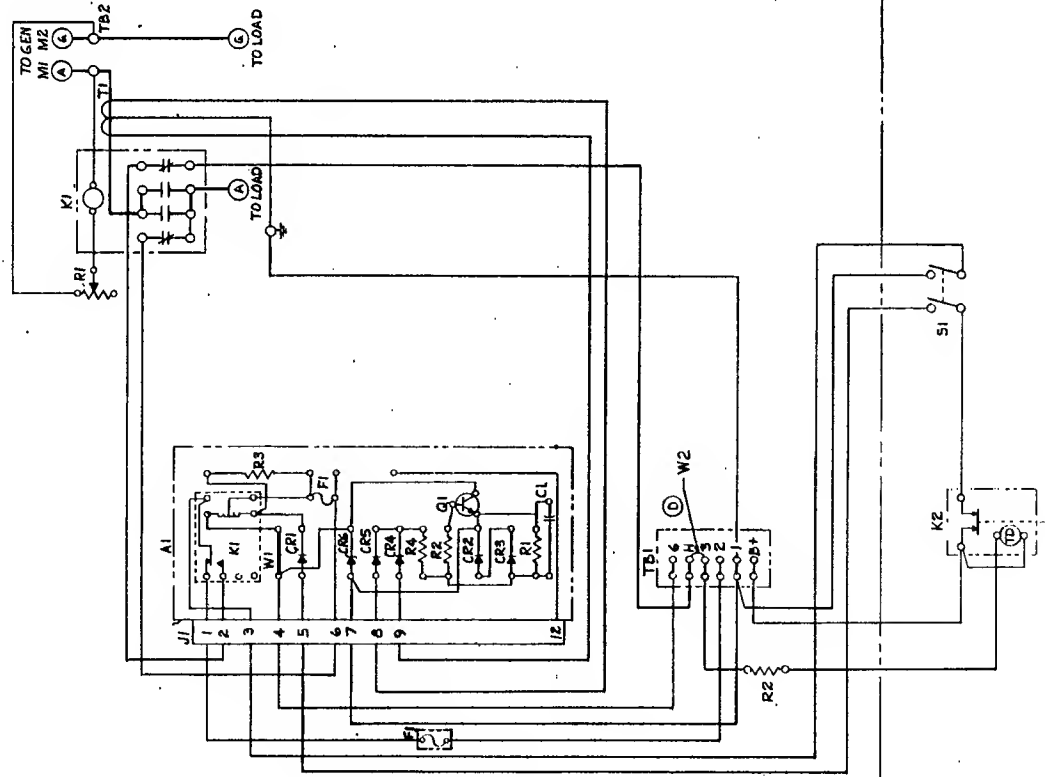
WATT RATING	MODEL	WIRING DIAGRAM	PAGE
7,500	7.5HA-21/1	617C132	61
	7.5HA-21/10	617C133	62
	7.5HA-21/12	617C133	62
	7.5HA-21-4/1	617C138	63
	7.5HA-21-4/10	617C139	64
	7.5HA-21-4/12	617C139	64
	7.5HA-23/1	617C140	65
	7.5HA-23/10	617C141	66
	7.5HA-23/12	617C141	66
	7.5HA-23-4/10	617C142	67
	7.5HA-23-4/12	617C142	67
15,000	15.0HA-22/1	617C134	68
	15.0HA-22/10	617C135	69
	15.0HA-22/12	617C135	69
	15.0HA-23/1	617C143	70
	15.0HA-23/10	617C144	71
	15.0HA-23/12	617C144	71
	15.0HA-23-4/10	617C145	72
	15.0HA-23-4/12	617C145	72

PRINTED CIRCUIT BOARDS

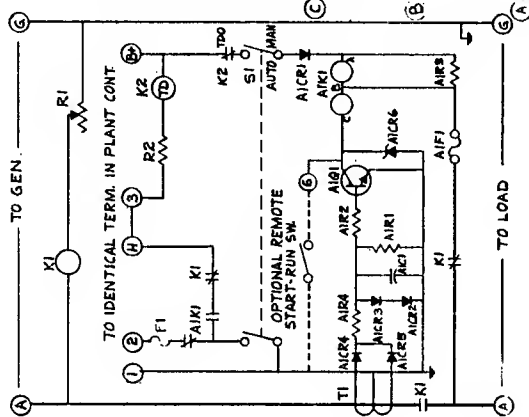
Individual components of the printed circuit boards are given on pages 73 and 74.

617C132

WIRING DIAGRAM
FRONT VIEW OF CHASSIS



SCHEMATIC



- NOTES:
1. OPERATE WITH NEGATIVE GROUND ONLY.
 2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU THE AC GROUND LEAD.

7.5HA-21/1C

D	REVISED WIRING ON TB1	7/18/37
C	ADDED 33A592 (W2)	7/18/37
B	TRIM WAS 30182586	7/18/37
A	ADDED REF.	7/18/37
1	ADDED 32PI53 & 32-100	7/18/37
2	ADDED 32PI53	7/18/37

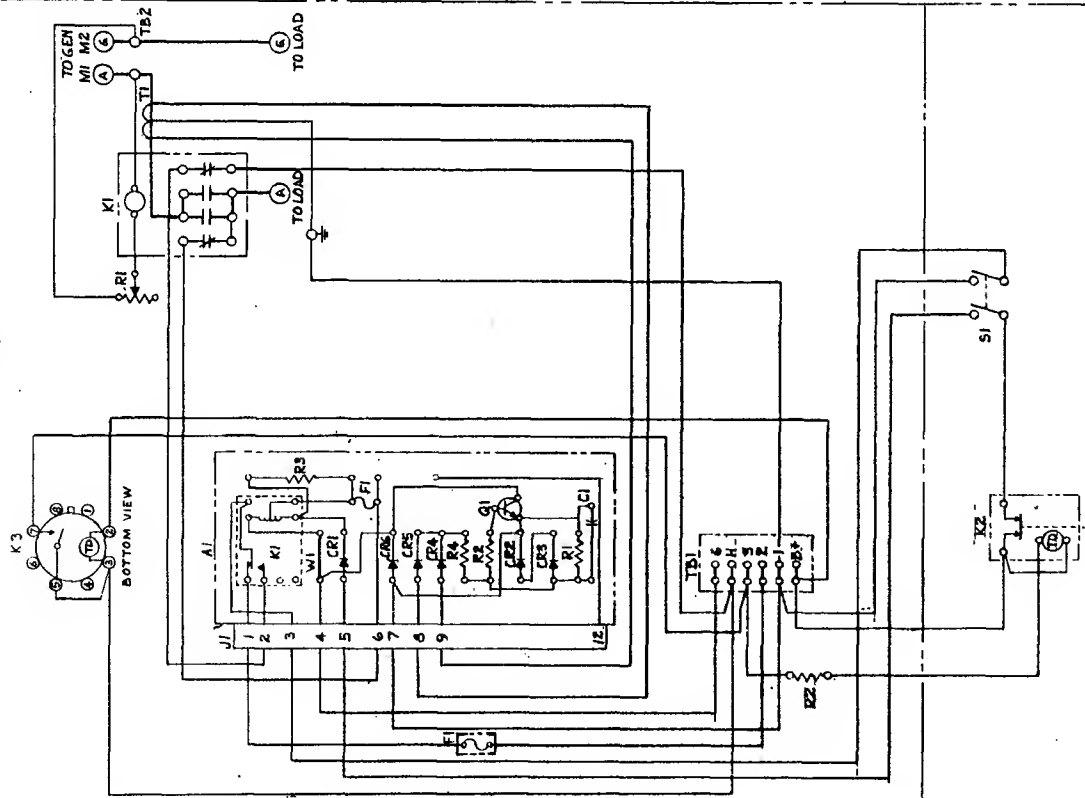
Origin

7.5HA-21/1C	WIRING DIAGRAM	7/18/37
12V CRANKING	CONTROL - AUTO DEMAND	7/18/37
120V 1PH		7/18/37
2W 50/60 CY		7/18/37

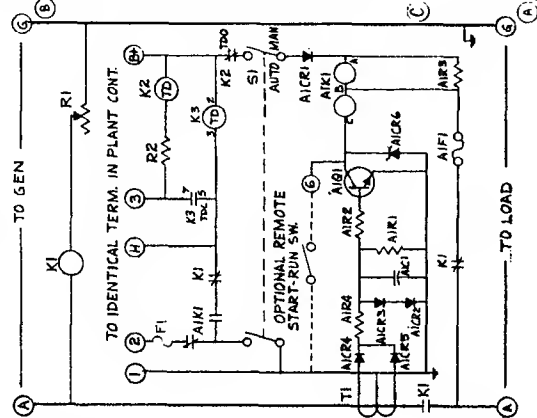
617C132

617C133

WIRING DIAGRAM
FRONT VIEW OF CHASSIS



SCHEMATIC



NOTES:

1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD.

7.5HA-21/10C

7.5HA-21/12C

REF. DES.	PART NO.	QTY	DESCRIPTION
A1	308710	1	CONTROL-LOAD SENSOR
	3013280	2	BRACKET-MOUNTING
	518235	2	FASTENER-SM-FIN
K1	307655	1	CONTACTOR
	312142	2	TERMINAL
	307455	2	WIRE
	1601144	1	UPPER
K2	320104	1	RELAY-CRANKING LIMITER
K3	307446 (U1)	1	RELAY-TIME DELAY (20 SEC)
	3071687 (U2)	1	RELAY-TIME DELAY (5 SEC)
R1	304575	1	RESISTOR-ASST
R2	304282 (REF)	1	RESISTOR-300 OHM 1/2 W
R3	304191 (REF)	1	RESISTOR-3 OHM 10 W
S1	308708 (REF)	1	SWITCH-AUTO MANUAL
T1	315344	1	TRANSFORMER-ASST
T2	312459 (REF)	1	TERMINAL BLOCK
T3	312454	1	MARKER STRIP
T4	312142	2	TERMINAL-GROUND
T5	318546	1	WIRING HARNESS
	3010273	1	CONTROL BOX
	9801815	1	SCREEN-SHEATH
	9802253	1	SCREEN-SHEATH
	3018253	1	TRIM
	518737	3	FASTENER-TRIM
	99086	1	NAMEPLATE-CONTROL
F1	321P153	1	FUSE, 3 AMP
	321-100 (REF)	1	BLOCK-FUSE

12V CRANKING

7.5HA-21/10C

7.5HA-21/12C

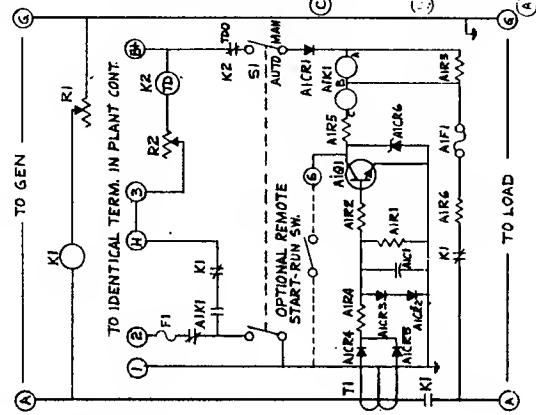
120V 1PH 50/60CY

WIRING DIAGRAM

CONTROL-AUTO DEMAND

617C133

SCHEMATIC



SCHEMATIC

NOTES:

1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD.

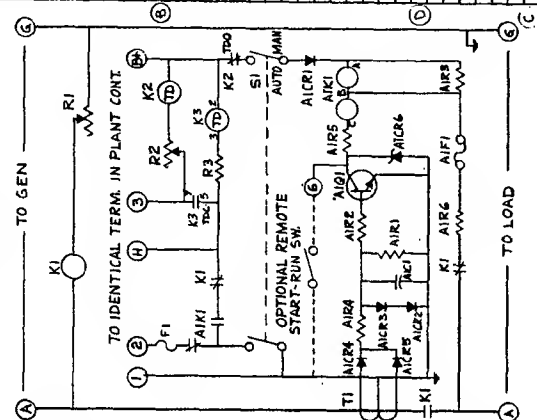
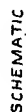
7.5HA-21-4/1C

D	REVISED WIRING ON TBI	NB	TV	8-3-70
C	ADDED 332A592 (W2)	NB	TV	8-3-70
B	T.O.M. A.S. 331B2586	NB	TV	7-24-70
A	ADDED PEPA	NB	TV	5-8-70
A	ADDED 3321P53 & 321-1C0	NB	TV	4-16-70
			W2	2-2-71

Oregon

01	7.5 HAZ-4/C 82V CRANKING	WIRING DIAGRAM CONTROL AUTO DEMAND	JAN 2-16-70	WKR	EXP	DATE	TIME	N.W.R.
	120V 1PH 2W 50/60CY							617C138

617C138



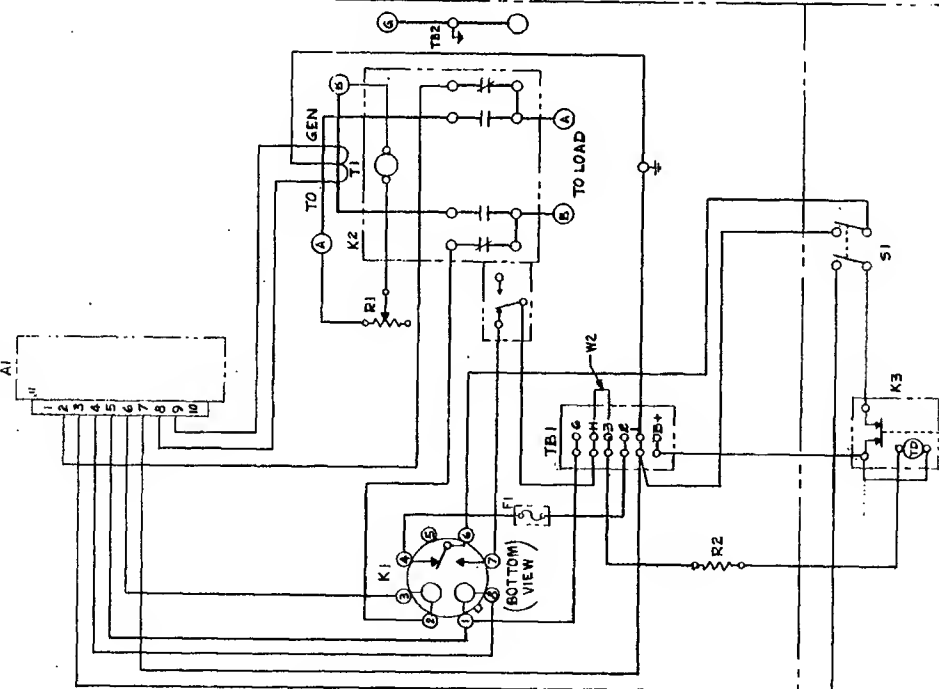
- NOTES:
1. OPERATE WITH NEGATIVE GROUND ONLY.
 2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD.

[illegible]

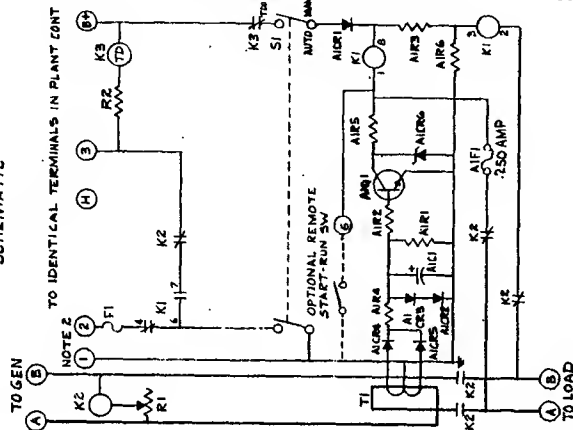
7.5HA-21-4/10C

[illegible]

617C140

WIRING DIAGRAM
FRONT VIEW OF CHASSIS

SCHEMATIC



REF. DES.	PART NO.	QTY.	DESCRIPTION
A1	30B247	1	AMPLIFIER ASSY-LOAD SENSOR
	30B3280	2	BRACKET-MOUNTING
	518A255	2	FASTENER-SNAP IN
K1	307A858	1	RELAY-START RUN
K2	307C666	1	CONTACTOR
	18D-144	2	STRAP
	332-517	4	TERMINAL
	309A42	1	SWITCH-AUXILIARY
	309A193	1	INSULATOR
K3	320B104	1	RELAY-CRANKING LIMITER
	304A882	1	RESISTOR ASSY - 750 OHM 25W
R2	304A197(REF)	1	RESISTOR-3 OHM 10W
S1	30BP88(REF)	1	SWITCH-AUTO MANUAL
T1	315A345	1	TRANSFORMER ASSY-CURRENT
TB1	332A688(REF)	1	TERMINAL BLOCK
	332A840	1	MARKER STRIP
TB2	332-517	2	TERMINAL-GROUND
W1	338C552	1	WIRING HARNESS
W2	332A552	1	LUMPER
	301D3213	1	CONTROL BOX
	88C1815	1	SILSCREEN
	88A2252	1	SILSCREEN-SCHEMATIC
	301B293	1	TRIM
	518P237	3	FASTENER-TRIM
	88A866	1	NAMEPLATE-CONTROL
			0417C140
F1	321P153	1	FUSE-3 AMP
	321-100(RED)	1	BLOCK-FUSE

7.5HA-23/1C

NOTES:

1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD.

12V CRANKING

-01 7.5HA-23/1C

WIRING DIAGRAM
CONTROL-AUTO DEMAND120/240V 1PH
3W 50/60CY

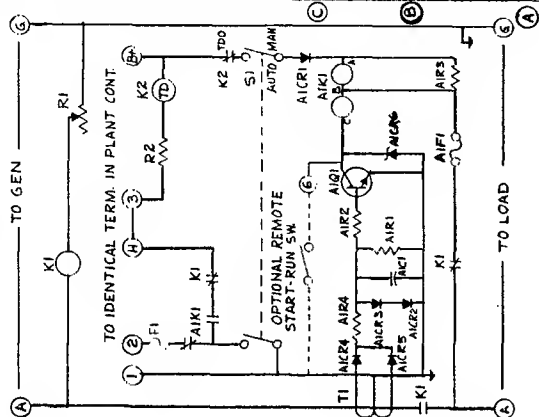
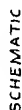
Origin

3-12-70 NHR JMD

JMD

617C140

617C140

[illegible]

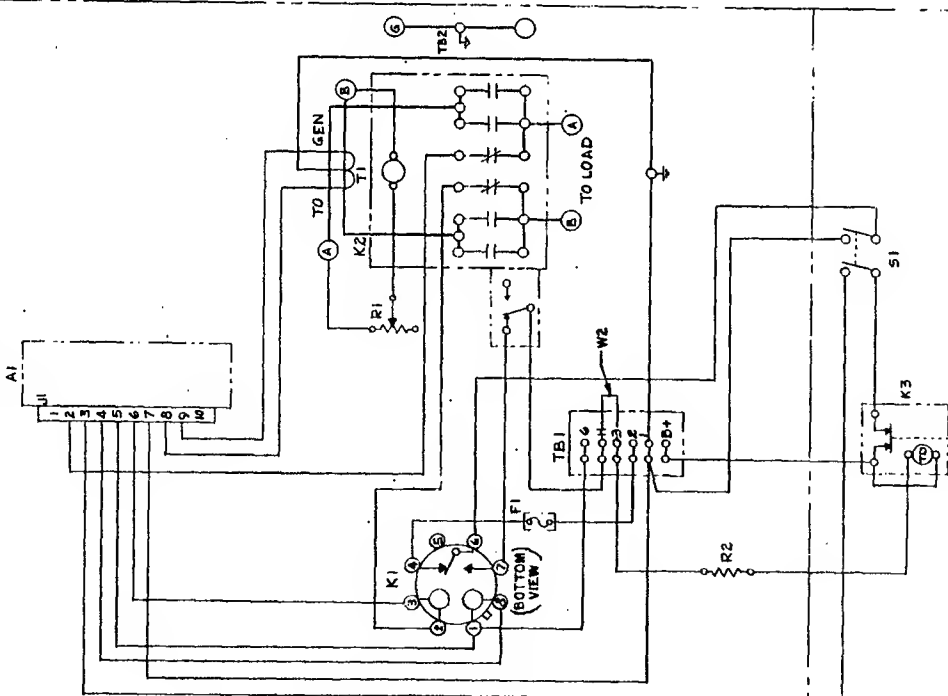
WATS:-

1. OPERATE WITH NEGATIVE GROUND ONLY
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO SEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD

15.0HA-22/1C

150H-22/1C 12V CRANKING	240V 1PH 50/60 CY 2W
150H-22/1C 12V CRANKING	240V 1PH 50/60 CY 2W

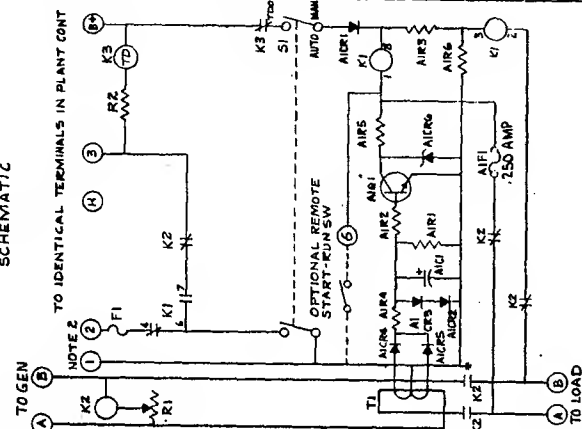
617C143

WIRING DIAGRAM
FRONT VIEW OF CHASSIS

NOTES:

1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD.

SCHEMATIC



REF. DES.	PART NO.	QTY.	DESCRIPTION
A1	3009747	1	AMPLIFIER ASSY-LOAD SENSING
	3019330	2	BRACKET-MOUNTING
	5184295	2	FASTENER-SNAP IN
K1	3074558	1	RELAY-START RUN
K2	3076567	1	CONTACTOR
	180-144	2	STRAP
	3074942	2	BUS BAR
	332-142	2	SLEEVING 1.3/4" OF (888-22)
	309442	4	TERMINAL
	3091193	1	SWITCH-AUXILIARY
	3074685	4	INSULATOR
	3208104	1	RELAY-CRANKING LIMITER
R1	3041682	1	RESISTOR ASSY-250 OHM, 25 W
R2	3041192(REF)	1	RESISTOR-3 OHM, 10 W
S1	308981(REF)	1	SWITCH-AUTO MANUAL
T1	3154346	1	TRANSFORMER ASSY-CURRENT
W1	3321059(REF)	1	TERMINAL BLOCK
W2	3321040	1	WIRING STRIP
	332-142	2	TERMINAL-BINDING
	3305552	1	WIRING HARNESS
	3321592	1	JUMPER
	3013272	1	CONTROL BOX
	3013273	1	SLIDE-SCREEN
	3013274	1	SLIDE-SCREEN
	3013275	1	SLIDE-SCREEN-SCHMATIC
	3013276	1	SLIDE-SCREEN
	3013277	1	FASTENER-TIE
	904660	1	WATER-TELE-CONTROL
F1	3210553	1	FUSE, 3 AMP
	32100(REF)	1	BLOCK-FUSE

15.0HA-23/1C

B	REVERSE WIRES 283 ON K1	UD	TV	W2-20
A	ADDED/REF	30	TV	58-20
A	ADDED 3210553 & 321-100	JD	TV	4-4-20
1	1	1	1	1

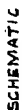
12V CRANKING

15.0HA-23/1C

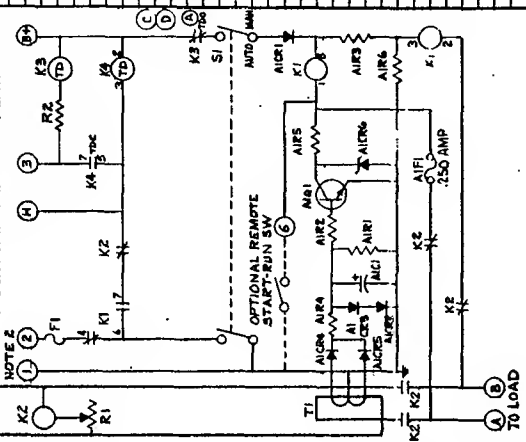
WIRING DIAGRAM
CONTROL-AUTO DEMAND

120/240V 1PH 50/60 CY

617C144



TO GEN (A) (B) TO IDENTICAL TERMINALS IN PLANT CONT



REF. DES.	PART NO.	QTY.	DESCRIPTION
A1	3008747	1	AMPLIFIER AUTO-LOAD SENSOR
	30103280	2	BRACKET-MOUNTING
	5184295	2	FASTENER-SNAP IN
K1	3074858	1	BELAY-START RUN
K2	3070567	1	CONTACTOR
	160-144	2	STRAP
	3074842	2	BUS BAR
	337-142	2	SLEEVING 1/4" OF (899-22)
	309442	4	TERMINAL
	309442	1	SWITCH-AUXILIARY
	3094163	1	INSULATOR
	2074855	4	WIPPER
K3	3070104	1	BELAY-DRAWING LIMITER
K4	3074445-(01)	1	BELAY-TIME DELAY (20 SEC)
	3074458-(02)	1	BELAY-TIME DELAY (5 SEC)
	3241375	1	SOURCE ASSY
R1	3044152	1	RESISTOR ASSY-750 OHM, 25W
R2	3044152 (REF)	1	RESISTOR-3 OHM, 10W
S1	300848 (REF)	1	SWITCH-AUTO MANUAL
T1	2154245	1	TRANSFORMER ASSY-CURRENT
T2	3024892 (REF)	1	TERMINAL BLOCK
	3024840	1	MARKER STRIP
T2	3024147	2	TERMINAL-GROUND
M1	3060552	1	WIRING HARNESS
	30103273	1	CONTROL BOX
	9021815	1	SLASCREEN
	9042252	1	SLASCREEN-SCHEMATIC
	3024892	1	TERMINAL BLOCK
	3008747	3	FASTENER-TYRM
	BR49466	1	WIREPLATE-CONTROL
F1	3241513	1	FUSE, 2 AMP
	3241000 (REF)	1	BLOCK-FUSE

15.0HA-23/10C

15.0HA-23/12C

E	REVERSED WIRES 2 & 3 ON K	JD	70-2-170
D	WAS 307A789	WB	8-28-70
D	WAS 307A971	JD	5-2-70
C	WAS 307B879	JD	5-12-70
B	ADDED (REF)	JD	5-8-70
B	ADDED 32 P. 53 & 321-100	JD	4-14-70
A	WAS 304A131	WB	6-7-70
	REASON	JD	2-11-

Origin

12VCRANKING

ON 11/03/2003

50HA-23/10C

5.0HA-23/12C

Λ042/02

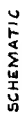
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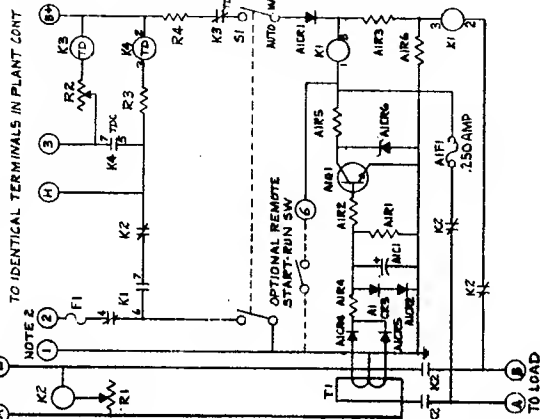
1123.

1. OPERATE WITH NEGATIVE GROUND ONLY.
2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THRU AC GROUND LEAD.

WIRING DIAGRAM FRONT VIEW OF CHASSIS



TO IDENTICAL TERMINALS IN PLANT CONT



PARTS LIST			
REF. DES.	PART NO.	QTY.	DESCRIPTION
A1	3006717	1	AMPLIFIED ESD-LEAD SENSOR
	3013320	2	BRACKET-MOUNTING
	5164285	2	FASTENER-SHAP IN
K1	3017658	1	RELAY-START RUN
K2	3017657	1	CONTACTOR
	1557144	2	SHIM
	3071942	2	BUSH
	332-142	2	SLEEVEING 1.3 W/F (800-22)
	30042	4	TERMINAL
	30042	4	TERMINAL
	3004193	1	INSULATOR
	3071655	4	JUMPER
K3	3008194	1	RELAY-DRAWING LIMITER
K4	3017658	1	RELAY-TIME DELAY (20 SEC)
	3017657	1	RELAY-TIME DELAY (2 SEC)
	3231773	1	SOCKET ASST
K1	3044652	1	RESISTOR ASST-750 OHM .75W
K2	3044720	1	RESISTOR-15 OHM .50W
K3	3053360	1	RESISTOR-15 OHM .75W
K4	3053360	1	RESISTOR-750 OHM .75W
S1	3006761	1	SWITCH-AUTO MANUAL
T1	3154536	1	TRANSFORMER ASST-CURRENT
U1	3246595	1	TERMINAL BLOCK
	3246590	1	MARKER STRIP
U2	324-142	2	TERMINAL-GROUND
W1	3265553	1	WIRING HARNESS
	30133273	1	CONTROL BOX
	3801815	1	SILKSCREEN
	984252	1	SILKSCREEN-SCHEMATIC
	3016793	1	TRIM
	5167237	3	PASTENER-TRIM
	684955	1	NAMEPLATE-CONTROL
F1	32P153	1	FUSE, 3 AMP
	32-100	1	BLOCK-FUSE

15.0HA-23-4/10C

15.0HA-23-4/12C

1. OPERATE WITH NEGATIVE GROUND ONLY.

2. IT IS NOT NECESSARY TO CONNECT TERMINAL 1 TO GEN BECAUSE GEN & CONTROL ARE CONNECTED THROUGH AC GROUND LEAD.

32V CRANKING

-01	15.0NA-23-4/10C
-02	15.0NA-23-4/12C

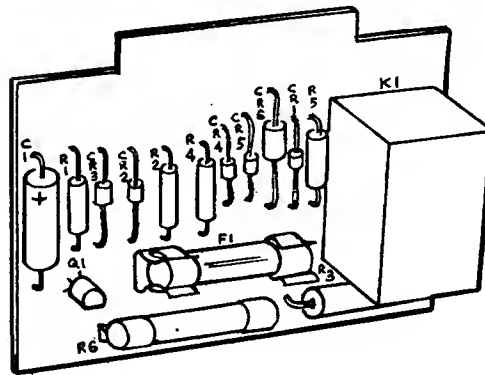
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DATE 3-12-70 WKR 1004 VINT

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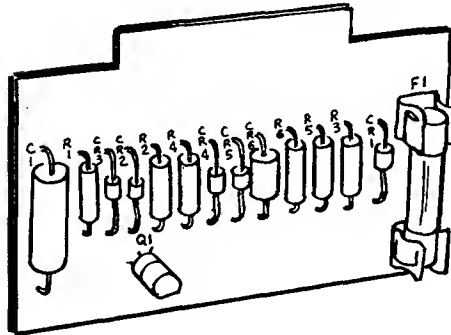
**300B740, 300B741 AND 300B743 PRINTED CIRCUIT BOARDS
(FOR 2-WIRE CONTROLS)**



COMPONENT	PART NUMBER	QTY. USED	DESCRIPTION
R1	350-540 (p.c. board 300B741)	1	Resistor, 2.2 K ohm
	350P548 (p.c. board 300B740, 300B743)	1	Resistor, 10 K ohm
R2	350-528	1	Resistor, 220 ohm
R3	352A111 (p.c. board 300B740, 300B743)	1	Resistor, 47 ohm
	352-119 (p.c. board 300B741)	1	Resistor, 100 ohm
R4	350-520	1	Resistor, 47 ohm
R5	350-538 (p.c. board 300B743 only)	1	Resistor, 1.5 K ohm
R6	352A156 (p.c. board 300B743 only)	1	Resistor, 150 ohm
C1	356A9	1	Capacitor, 10 mfd
CR1 - CR5	357A4	5	Diode, 400 MA
CR6	359A18 (p.c. board 300B743)	1	Diode, Zener
	359A29 (p.c. board 300B740, 300B741)	1	Diode, Zener
F1	321-168	1	Fuse, 1/4 ampere
K1	307A1087	1	Relay, Dual Coil
MP1	332B1299 (p.c. board 300B740, 300B741)	1	Board, Printed Circuit
	332B1304 (p.c. board 300B743)	1	Board, Printed Circuit
Q1	362A7 (p.c. board 300B740, 300B741)	1	Transistor, Signal
	362A14 (p.c. board 300B743)	1	Transistor, Signal
	321P163	2	Clip, Fuse

NOTE: Components R5 and R6 on p.c. board 300B743 only.

**300B747 PRINTED CIRCUIT BOARD
(FOR 3-WIRE CONTROLS)**



COMPONENT	PART NUMBER	QTY. USED	DESCRIPTION
R1	350-540	1	Resistor, 2.2 K ohm
R2	350-528	1	Resistor, 220 ohm
R3	350-528	1	Resistor, 220 ohm
R4	350-520	1	Resistor, 47 ohm
R5	350-524	1	Resistor, 100 ohm
R6	350-528	1	Resistor, 220 ohm
C1	356A9	1	Capacitor, 10 mfd
CR1 - CR5	357A4	5	Diode, 400 MA
CR6	359A29	1	Diode, Zener
F1	321-168	1	Fuse, 1/4 ampere
MP1	332B1308	1	Board, Printed Circuit
Q1	362A7	1	Transistor, Signal
	321P163	2	Clip, Fuse